DOCUMENT RESUME

ED 116 140 CS 002 304

AUTHOR Rawson, Margaret B., Ed.
TITLE Bulletin of the Orton Society, Volume 24.
INSTITUTION Orton Society, Towson, Md.
PUB DATE 74
NOTE 229p.
AVAILABLE FROM The Orton Society, Inc., 8415 Bellona Lane, Towson, Md. 21204 (members $4.00, nonmembers $5.00, prepaid)

EDRS PRICE MF-$0.76 HC-$12.05 Plus Postage
DESCRIPTORS *Dyslexia; Elementary Secondary Education; Foreign Countries; Language Development; *Language Handicaps; *Learning Disabilities; Neurological Organization; *Perception; Psycholinguistics; Reading Diagnosis; Reading Failure; *Reading Instruction; Remedial Reading; Self Concept; Spelling
IDENTIFIERS Orton Society

ABSTRACT

This bulletin is published annually in the interest of children with specific language disabilities, learning disabilities, or dyslexia. Articles in this issue deal with "A Neurological Overview of Specific Disability for the Non-Neurologist," "The Evolution of Human Capacity for Language," "A Salute to Anna Gillingham," "The Self-Concept and the Cycle of Growth," "Advances in English Spelling," "Reading: An Auditory-Vocal Process," "A Diagnostic and Prescriptive Child Study Center for Children with Specific Learning Disabilities--Tribute to Dr. Gertrude E. Justison," "The Mainstream Approach for the SLD Child: A Public School Model," "Specific Language Disability in Secondary Schools," "Adolescents: It's Never Too Late to Learn," "Dyslexic Adolescent Boys: Classroom Remediation Is Not Enough," "Reading Failure and Juvenile Delinquency," "The Dyslexic Copes," and "The International Scene," Information about the Orton Society is also presented. (MKM)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED116140

THE ORTON SOCIETY, INC.

BULLETIN
OF THE
ORTON SOCIETY

A Non-profit Scientific and
Educational Organization for the Study
and Treatment of Children
with Specific Language Disability
(Dyslexia)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY
The Orton Society, Inc.
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER.

VOLUME XXIV 1974 $5.00

THE BULLETIN OF THE ORTON SOCIETY is published annually by The Orton Society, Inc., and sent to all members without charge. Additional copies of this issue may be secured by members for $4.00 each; by non-members for $5.00. Orders should be sent prepaid to The Orton Society, 8415 Bellona Lane, Towson, Md. 21204. Copyright © 1974 by the Orton Society, Inc. Manufactured in the United States of America. All rights reserved.

THE ORTON SOCIETY, INC.

OFFICERS 1974

President ..... Roger E. Saunders
First Vice-President ..... Lucia R. Karnes, Ph.D.
Second Vice-President ..... Mrs. Arlene Jones Martin
Recording Secretary ..... Mrs. Dorothy M. Tower
Corresponding Secretary ..... Mrs. Eleanor T. Hall
Treasurer ..... Robert B. Chapman, III
President Emerita ..... Mrs. June Lyday Orton
Past President ..... Mrs. Margaret B. Rawson

BOARD OF DIRECTORS

Mrs. Alice Ansara
N. Dale Bryant, Ph.D
Robert B. Chapman, III
Mrs. Sally B. Childs
Mrs. Aylett R. Cox
Jeannette J. Jansky, Ph.D.
Miss Alice Koontz
Mrs. Jane McClelland
Mrs. Mary Wootton Masland
Mrs. Paula D. Rome
Mrs. Mary Louise Trusdell
Mrs. Betty Wells
Paul M. Williams

ADVISORY COUNCIL

Lloyd J. Thompson, M.D.
Chairman
Lauretta Bender, M.D.
Arthur L. Benton, Ph.D.
John B. Biglow, M.A.
Milton Brutten, Ph.D.
Edwin M. Cole, M.D.
Macdonald Critchley, M.D.
Leon Eisenberg, M.D.
J. Roswell Gallagher, M.D.
Manuel R. Gomez, M.D.
Katrina de Hirsch, F.C.S.T.
Carl L. Kline, M.D.
Paul V. Lemkau, M.D.
Richard L. Masland, M.D.
John McLeod, Ph.D.
Zdeněk Matějček, PhDr.
Ralph D. Rabinovitch, M.D.
Howard P. Rome, M.D.
Archie A. Silver, M.D.
Mrs. Beth H. Slingerland, B.A.
Lucius Waites, M.D.
Leon J. Whitsell, M.D.

STAFF

Field Director ..... Alice Koontz
Administrative Assistant ..... Linda M. Frank

The Orton Society, Inc.
8415 Bellona Lane
Towson, Maryland 21204

BULLETIN OF THE ORTON SOCIETY

VOLUME XXIV, 1974

Editor: Margaret B. Rawson

Associate Editors: Paula D. Rome
Roger E. Saunders
Marion F. Stuart

Assistant Editor: Jan paul Miller

Review Editor: Alice Koontz

Editorial Consultants: John I. Arena
Arthur L. Benton
Macdonald Critchley
Carl L. Kline
Mary W. Masland
June L. Orton
Lloyd J. Thompson

FOREWORD

As in previous years, this 24th annual *Bulletin* contains papers from the laboratory and from the research and treatment clinic, as well as reports from school and individual educational settings. The editors are responsible for reviews, unless they are otherwise initialed.

As always, the views represented throughout are those of the several writers, for the Orton Society as a body holds neither an "official" view nor judgmental responsibility. This is discussed in more detail in the Society's Policy Statement, reprinted at the end of this issue. Responsibility for inclusion of all materials in the *Bulletin* rests with the Editors, to whom they seemed relevant to the Society's stated purpose, "The study, treatment, and prevention of problems of Specific Language Disability."

An Index to Volumes I through XXI of this *Bulletin* is now available.

Comments and criticism from readers will be welcome at any time. Papers and other contributions to be considered for publication in Volume XXV should be submitted, in duplicate, as long as possible before February 1, 1975. See Instructions to Contributors, p. 222.

Mrs. Margaret B. Rawson, Editor
Route 10
Frederick, Maryland 21701

Contents

Foreword iii

The 1973 Samuel T. Orton Award 1

A Neurologic Overview of Specific Language Disability for the Non-Neurologist
Drake D. Duane 5

The Evolution of Human Capacity for Language
Brenda K. Sladen 37

A Salute to Anna Gillingham

1. A Pupil for Life
Jane McCelland 48
2. The Anna Gillingham I Knew
Sally B. Childs 50
3. Memories of Anna Gillingham: A Human Being Like the Rest of Us
Beth H. Slingerland 55

The Self-Concept and the Cycle of Growth
Margaret Byrd Rawson 63

Advances in English Spelling
Sally B. Childs 77

Reading: An Auditory-Vocal Process
Alexander Bannatyne 87

A Diagnostic and Prescriptive Child Study Center for Children with Specific Learning Disabilities
Tribute to Dr. Gertrude E. Justison
Roger E. Saunders 103

I. Overview of the Child Study Center
Sara J. Little, Marilyn Savage, Kathleen Somers, A. Alleane Taylor, Franklin Tinney and *Sherrill Werblood-Manges* 106

II. Two Principals Describe the Program in Their Schools
1. First-Year Implementation of the Child Study Program in the Clarksville Elementary School
Edward E. Alexander 122

2. Influence of the Child Study Center on Elementary School Programming
Shirley R. Kellam 127

The Mainstream Approach for the SLD Child: A Public School Model
Dorothy Ley and *Richard Metteer* 130

Specific Language Disability in Secondary Schools
Julia R. Herbert 135

Adolescents: It's Never Too Late to Learn
Jane McClelland 141

Dyslexic Adolescent Boys: Classroom Remediation Is Not Enough
David W. Gow 154

Reading Failure and Juvenile Delinquency
Dennis L. Hogenson 164

The Dyslexic Copes
Norman Phillips, George Bright, Richard Berg, and *Foster Nowell* 170

The International Scene
Dyslexia in Europe—I
Connie Newell 174
Dyslexia in Europe—II
Mary Louise Trusdell 181

Awards Presented by the New York Branch of the Orton Society 192

Semantics 1974—What Is S.L.D.? 196

Reviews 197

A Statement of Policy 216

What's in a Name? 217

Facts about the Orton Society 219

Membership in the Orton Society 219

Branch Presidents 221

The 1973 Samuel T. Orton Award

Fresented by the Orton Society to

Sally B. Childs

PRESENTATION BY ROGER E. SAUNDERS

One of the happiest duties of the office of the President of the Orton Society is to make the telephone call to the person selected by the committee to receive the annual Samuel T. Orton Award. It was an especially happy moment this year to announce the news to a good friend of the Society "down East."

It is appropriate that Sally Childs returns to Baltimore for this award, for it was here that her English father met, wooed, and wed her mother, a fellow student at Peabody, who was descended from an old Virginia family.

After an early childhood in New York and Connecticut, Sally graduated from the Ethical Culture School in New York City and completed pre-medical education at Smith College. But romance intervened to rob the medical profession of what could have been, we feel sure, a great woman doctor, for it was in her final year that a young instructor in English and Speech from Harvard chose her charm and intelligence from some 2,000 "Smithies." After their marriage they lived and worked with students at Bowdoin College in Maine, and at Columbia University and Cooper Union in New York City. Summers were spent in Connecticut and in Maine, cruising its rockbound coast.

This happy life was shared by twin daughters born, of all places, in Paris, where Ralph had been sent on a Franco-American Fellowship. Six grandchildren now contribute to keeping the Childs young and spirited. While most of their pasttime has been devoted to study and books, Ralph has recreated with boats, barn building, and house alterations, and Sally with gardening, sewing, cooking and decorating.

Sally's professional life as a teacher began at sixteen when she became self-supporting at a dollar an hour in a summer church school program. As young faculty wives in Maine, she and a friend organized a nursery school. (Who would have predicted that her children, as well as those of her co-worker, would later be found to have a little-known learning difficulty?) Sally became acutely aware of the problems of her twin daughters when one of them began to stutter. This led her back to her former teacher at the Ethical Culture School, Anna Gillingham. Their meeting began a new chapter in both their lives.

Sally finished her degree at Teachers College, Columbia University, in 1935 after shifting to education. She took additional graduate studies, then taught at the Fieldston Lower School in New York. By this time her twins had been diagnosed as having specific language disability and were being taught reading and spelling in a different way from the rest of their class. As a result of this, and recognizing similar problems in her own students, Sally's life became focused.

In 1941 she began in-depth training in the remedial procedures of Anna Gillingham and Bessie Stillman. Of historical interest to young teachers is the fact that she enrolled in the first formal course ever given which was directed by Dr. Edwin Cole of the Massachusetts General Hospital in Boston, entitled "The Neurology of Speech and Reading." This provided her with a firm theoretical foundation for the practical work which she continued in

the fall, and for research such as the searching of Dr. Orton's case records, classifying the relationship between stuttering and reading.

During Anna Gillingham's later years, Sally began to substitute for her in training programs that were already established. Then, as the need demanded, she became a teacher of teachers in her own right, and developed private training programs in this country and in England.

Her association with Anna Gillingham which had begun when Sally was her pupil at the age of eleven, led her to become her professional student, then to become a colleague as she matured, and later a nurturing younger friend, and finally her professional heir.

She consulted with many private and public schools, directing programs for those capable children who were not responding to the techniques employed in their classrooms. She became recognized not only for assisting in the refinement of the Gillingham Manuals, but for her own publications: *Sound Phonics, Sound Spelling, The Childs Spelling Rules, Magic Squares,* and *The Childs Phonics Proficiency Scales,* as well as numerous articles in professional journals.

A growing group of physicians, psychologists, and teachers gradually recognized the collaborative work of Anna Gillingham and Samuel T. Orton. After Dr. Orton's death in 1948, these colleagues felt the need to awaken public awareness and understanding of the child with specific language disability and to share mutual teaching experiences. Thus was the Orton Society founded, and there was Sally Childs, serving as its first vice president, and as its second president from 1960 to 1965, and as an active board member ever since.

Citation

Sally Childs, whom we have the honor to present for the 1973 Samuel T. Orton Award, is a pioneer educator of children, of teachers, and of the community; a torchbearer in the continuation of the work of her professional forebearers; a scholarly researcher in her own right in language and in learning; a practical designer of procedures and materials for implementing pedagogy for children.

She has been a founder and a leader of The Orton Society, and

has given unstintingly of her time, energy and vision during the Society's first quarter century.

Her elders, her contemporaries, her student teachers, and all who have heard her speak, or who have read her printed word, have been inspired in their work with children whose needs are the primary motivating force in the life and work of the 1973 recipient of the Samuel Torrey Orton Award:

SALLY BURWELL CHILDS

Response by Sally B. Childs

Fortunately, one is told ahead about occasions like this, so there has been time for me to become accustomed to the idea of being honored by the Samuel T. Orton Award. I do have some of the feeling of the country woman who found herself magically transformed and said, "Lawk 'a mercy on me, this be none o' I." However, I am both grateful and gratified by this recognition of my work, and wish to share the honor with those who have helped and inspired whatever I have accomplished: Bessie Stillman and Anna Gillingham first of all, who gave me such a strong foundation that it is always hard to distinguish my own additions; the awe inspired by Dr. Orton himself; the kindly guidance of Mrs. Orton; Margaret Rawson, Roger Saunders, Gil Schiffman who first brought me to Baltimore; the administrators who gave me opportunities, including the people who took me across the Atlantic to Bath, England; and others too numerous to name; and especially to my husband, Ralph—my thanks for all your encouragement and help, and my hopes that you feel that it has been worthily used.

May I take this opportunity to ask help from all of you interested in helping children achieve better language and therefore communications skills? It seems clear that the survival of mankind, including our own selves, depends quite literally on these skills of language. Let us make an all-out effort to develop these skills to our utmost ourselves, as well as in our students, and to apply them in all aspects of life. Only by using our best efforts in this pursuit can we be worthy successors to those great pioneers who charted our path, Samuel T. Orton and Anna Gillingham.

A Neurologic Overview of Specific Language Disability for the Non-Neurologist

Drake D. Duane, M.D.

Consultant in Neurology, Mayo Clinic
Assistant Professor of Neurology
Mayo Medical School
Rochester, Minnesota

This paper represents a condensation of a 2-hour oral presentation that made extensive use of visual aids in color, many of which could not be reproduced. Several of the areas that received more elaboration in the oral presentation have been shortened in the interest of space.

Preface

The problem of language, particularly reading retardation in the otherwise apparently intellectually intact children and adults, has over the years received the attention of several disciplines. Neurology, psychiatry, psychology, speech pathology, pediatrics, ophthalmology, and special and general education have approached this area hoping to provide improved subject identification, comprehension of the cause of the deficit, and provision of a rational and successful mode of therapy. However, communication among these disciplines has often suffered because of the perspective and terminology peculiar to each. Neurology appears to many educators and parents to be a confusing science filled with verbiage that sometimes seems aimed at obscuring facts rather than clarifying them. This paper attempts to present my views on the substantive matters pertinent to a basic comprehension of the neural substrate of specific language disability and to present these views in terms meaningful to the non-neurologist. Despite simplification, hopefully accuracy will not suffer. Each topic could be reviewed at much greater length, but the objective is to provide a brief summary of the essential neurologic topics with a comment on how each area may pertain to language retardation. This discussion will emphasize disorders of language. The term "minimal brain dysfunction," in common use in

some centers, will not be used because that term includes purely motor disturbance that, *per se*, may not bear directly on linguistic development and academic achievement.

The topics to be included are: definition of specific language disability; selected aspects of neuroanatomy, neurophysiology and neurochemistry; previously suggested theories of language disability; a graphic schematic representation of language evolution (from which will be derived a characterization of the behavior associated with specific language disability); the frequency of this disorder; and comments on potential fruitful avenues of future investigation.

Definition

Terminology has been the source of considerable controversy and heated discussion. A term commonly accepted by educators and used by the Association for Children with Learning Disabilities is "specific learning disability." For our purposes we may substitute the word "language" for "learning." The definition used by the Association for Children with Learning Disabilities is that of a disorder in one or more of the basic psychologic processes involved in understanding or using spoken or written language. It may be manifested in disorders of listening, thinking, speaking, reading, writing, spelling or arithmetic. It has been variously referred to as perceptually handicapped, minimal brain dysfunction and dyslexia. It does not include learning problems which are due primarily to visual, hearing, or motor handicap, mental retardation, emotional disturbance, or environmental disadvantage.

Although broad, this definition has been generally accepted as the least onerous. Rabinovitch (1973) has argued that disorders of thinking should not be included in the definition because they may encompass potentially serious psychiatric disease characterized by disorders of thought. However, particularly in the young adult with specific language disability, disorders of concept formation and deviations from the norm for sequential logical thinking may be observed. The term "perceptually handicapped" suffers from emphasizing primarily the perceptual aspects of language disability. Although these may be salient, the term neglects the retentive and expressive aspects of specific language disability. "Minimal brain dysfunction" is a derivative of the originally proposed term "minimal brain damage," which often was not clear because of implied etiology. Furthermore, the

term "minimal brain dysfunction" includes primary disorders of attention and of motor disturbance that may have no direct effect on higher language function. The term "dyslexia" literally means a disorder of reading. However, seldom does one encounter solitary disorders of reading without evidence of other language deviations. Still, most who use this term tacitly include language disturbance other than that confined to reading.*

The final statement of the definition excludes primary disorders of vision, hearing, or motor function (the blind, the deaf, or the cerebral palsied). However, theoretically a child could have impairment of vision or hearing at the peripheral receptor level and have an unrelated disorder of higher language symbolization as well. In the case of cerebral palsy, despite evidence of spastic diplegia (a disorder of gait marked by stiff, poorly coordinated lower extremities) there may be normal intellectual potential, and conceivably the child could also demonstrate disorders of language function that are independent of the lower-limb motor disturbance. Mental retardation is excluded since, by definition, children with specific language disability must have evidence of at least average performance or verbal intelligence. However, in the extreme case a fair assessment of the child's native intellectual capacity may not be possible because of severe language retardation.

Although emotional disturbance may be seen in children with language retardation, it is believed that this disturbance represents the consequence of academic failure, lowered self-esteem, and social rejection rather than being the primary source of academic failure. With regard to environmental disadvantage the studies of Jansky and de Hirsch (1972) have indicated a higher frequency of reading failure in those of lower socioeconomic background. Presumably it is the environmental disadvantages of not having early exposure to language stimuli and of having less social value placed on linguistic performance that account for this disproportionate rate of reading retardation. Whether such social factors are indeed the sole cause of this finding remains to be clarified. However, from the standpoint of our definition, social disadvantage alone is not considered as a primary cause of specific language disability.

Thus the disorder is specific in the sense that the central nervous sys-

*Using the purely Greek etymology rather than the somewhat more common Greek-Latin derivation, "dyslexia" may be derived from *dys-* (= poor or inadequate) + *legein* (= to speak)—whence "words in the lexical rather than the grammatical sense, hence, language in general." See "Webster," Berlin (1887) and Thompson (1966).—Editor.

tem is involved primarily, rather than social or emotional factors. It is specific regarding select areas of language or learning, as contrasted with global dysfunction, as in mental retardation. However, it may be heterogeneous in its exact character of clinical expression and etiology. It is manifested chiefly by retardation in one or more language skills below that level predicted by analysis of intellectual capabilities. It is a disability as defined by performance that is socially and academically limiting within the context of prevailing educational approaches of a given culture.

Functional Neuroanatomy

Although separate structures of the central nervous system (see Fig. 1 and 2) will be referred to individually, one should bear in mind that the central nervous system does not operate on the basis of separate independent centers but rather as a synergistic integration of these various structures.

Spinal Cord

The cylindrical structure extending from the lowest portion of the brain within the vertebral column to the second lumbar vertebral body. From it emerge the spinal motor roots and to it extend the sensory nerve roots conveying deep (proprioceptive) and superficial sensation. The final expressions of voluntary (willed) and involuntary motor acts are conducted through it, whereas the segmentally arranged sensory input from the body passes through it to reach higher central nervous system centers. Although essential to one's appreciation of sensation and execution of motor acts, the spinal cord operates primarily on an unwilled reflex level and plays no known important role in the acquisition, retention, and use of linguistic information.

Cerebellum

A small structure located behind the lower brain (brain stem) and involved in modulating skilled motor acts. Impairment of cerebellar function, depending on its site, may result in a characteristic form of altered use of the limbs in which rhythmic oscillations of intended movement (known as tremor) and uneven rate, force, rhythm, and range of motion (known as ataxia) are observed; these may affect the limbs or speech or

both. Although the cerebellum has effects on higher neurologic centers, it has no documented role in language formulation. Thus, although the act of writing or speaking may be carried out in a dysrhythmic awkward manner, the symbolic content of language remains intact.

Brain Stem

The lower brain, which merges with the spinal cord, receives input from vestibular (inner ear) structures. It contains the cranial nerve motor

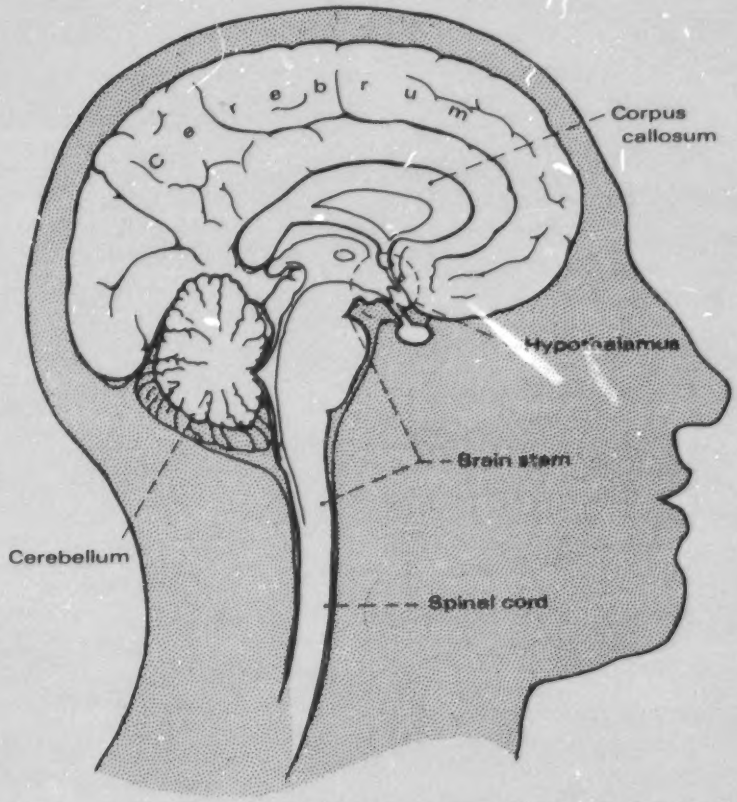


Figure 1. Side view of the central nervous system showing the inner surface of the left hemisphere and related structures.

nuclei essential to the final act of motor speech and ocular control as well as ascending sensory tracts from the spinal cord and descending motor tracts to the spinal cord. However, proof is lacking of an important role for those structures in language processing. Although a recent report (Frank and Levinson 1973) has suggested that vestibular disturbance at this level may be commonly observed in children with reading dysfunction, the conclusion of a cause and effect relationship awaits further investigation.

However, within the brain stem there is an anatomic and physiologic structure, the ascending reticular activating system, which projects upward to the surface of the cerebral hemispheres by way of connections with deep hemisphere nerve cells of the thalamus. This system is essential to wakefulness; lesions that destroy the reticular activating system in animals and man result in the appearance of sleep. A portion of the reticular activating system may project to the inner temporal lobes and thus may play a role in recent memory function (Magoun 1963). In experimental animals, electrical stimuli that presumably interfere with normal function of this center result in impairment of the acquisition of new information, i.e., learning. As will be seen, dysfunction in the reticular activating system, perhaps on a neurochemical basis, has been suggested as a possible mechanism whereby clinical disorders of attention and even language may result.

Hypothalamus

A group of nerve cells located in the midline undersurface of the brain which participate in the control of water and electrolyte balance, hunger, thermal control, emotional control, and perhaps primary reward and punishment. The role of this structure in pleasure and pain has been extended from the experimental work of Olds. Rats receiving electrical stimuli through implanted electrodes compulsively and repetitively manifest behavior that will result in the continuation of stimulation of the hypothalamic nuclei (Olds and Milner 1954). This suggested to the investigators that the stimuli were pleasurable. Wender (1973) and others have commented that those children considered "hyperkinetic" have particularly failed to profit from experience, and they have postulated that altered function within this brain region may be the key. However, at this point, such suggestions remain purely speculative, for whether the hypothalamus has primary independent "reward" and "punishment" functions in the human awaits documentation.

Thalamus

Groups of nerve cells within each hemisphere (half brain) with demonstrated function in conducting sensation to the brain's surface and modulating motor function. If a portion of this structure, at least in the adult, is physically altered (as in the complication secondary to chronic alcoholism known as the Wernicke-Korsakoff syndrome) impairment of memory of recent events results (Victor, Adams, and Collins 1971). The affected subject, although able to recall with clarity events that transpired years previously, is unable to remember events that have occurred minutes before inquiry. The afflicted patient will accept as fact spurious information regarding recent events, a behavior referred to as confabulation. Whether similar insult to these strategic thalamic centers bilaterally, in the child, would interfere with recent memory, particularly of linguistic events, remains speculative. As will be discussed later, extending information obtained from injury to the mature nervous system, which has acquired specialization of function, is particularly hazardous regarding implications of similar function in the developing nervous system.

Additionally, in the adult, injury to the back part of the thalamus may result in a disorder of oral expression referred to as aphasia (Van Buren and Borke 1969.)

Basal Ganglia

Another group of nerve cells within each hemisphere that play a role in voluntary and involuntary movement. Disorders of this brain region are characterized by a paucity or excess of spontaneous movement including motor speech. Although the motor function of writing and oral expression may be altered by dysfunction within this brain region, higher linguistic function appears not to suffer.

Cerebral Hemispheres

Each half of the brain (see Fig. 2 and 3) consists of the deeper structures alluded to already, fiber connections called white matter because of their gross pallor, and a thin, superficial layer of nerve cells referred to as cortex. Because of its darker hue the cortex has been referred to as gray matter. So when we implore someone to use their gray matter, we are referring to the activation of the superficial nerve cells over the surface of each half brain. The cortical surface has an undulating contour providing

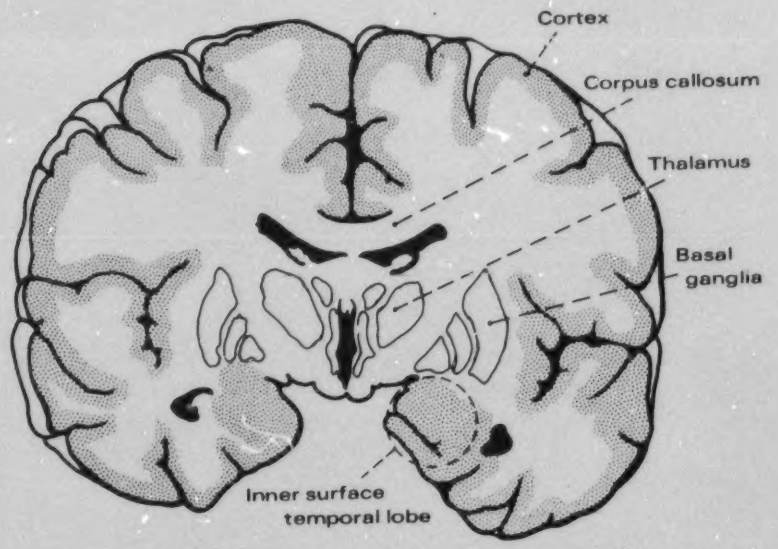


Figure 2. Frontal view of the brain showing location of some of its structures.

a large surface area, so that the average human brain contains approximately 14 billion nerve cells. The brain of man has more convolutions (undulations) than even higher primates like apes, particularly in the region of the parietal and temporal lobes. Each hemisphere is subdivided somewhat arbitrarily into divisions referred to as lobes: frontal, temporal, parietal and occipital. Through studies of acquired human disease of the hemisphere and stimulation of portions of the cortex, inferences about function of several hemispheric cortical sites have been drawn.

Occipital Lobe

Receives primary visual stimuli with an "association" area surrounding the primary receptive region in the back part and particularly the inner surface of each hemisphere.

Temporal Lobe

The upper portion is the primary receptive area of auditory information and has a surrounding region for interpretation and auditory memory

function. The inner surface of the temporal lobe has been implicated as a site for storing recent information. This conclusion has been drawn from observations that bilateral inner temporal lobe disease in an adult results in impaired memory for recent events (Van Buren and Borke 1972). Whether injury to this region in the developing nervous system would result in similar difficulty is unknown.

Parietal Lobe

Information about sensation from the opposite side of the body, position in space of body parts, and relation of the body to extrapersonal space is located within this region. Discrimination of size, shape, weight, and texture of objects occurs in this cortical region. A basic concept about the voluntary motor control of body parts is that one must be aware of where the part to be moved is located in space, otherwise movement will be coarse or severely limited. Such is the case in adults who have acquired lesions in this region. This finding has implications for the rehabilitation of the adult with disturbance in this area; limbs of which the patient is kinesthetically unaware must be monitored visually to be used.

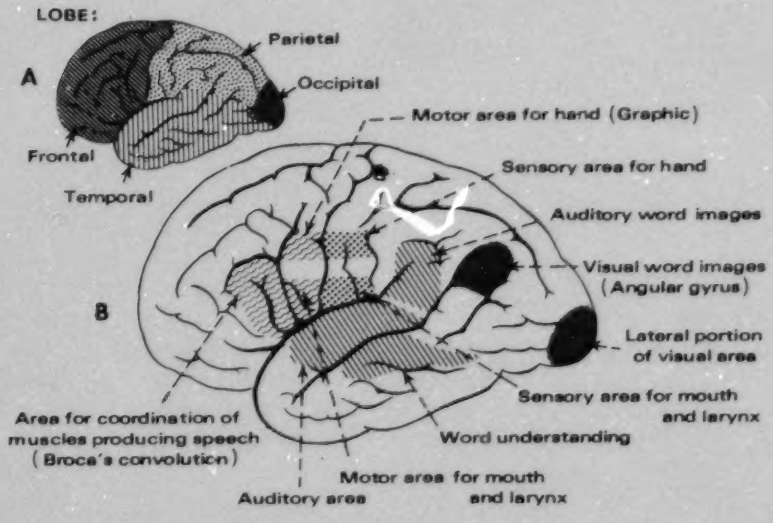


Figure 3. *A*, Lobes of the surface of the left hemisphere; *B*, hemispheric sites involved in language processes.

The region junctional with the occipital and temporal lobes at the back portion of the parietal lobe, on the side dominant for language, is important in maintaining acquired reading skill. Lesions occurring in this area (angular gyrus) result in the loss of reading ability referred to as alexia (Benson and Geschwind 1969, Critchley 1953). The potential implication of this observation for childhood reading disturbance will be amplified below.

Frontal Lobe

The origin of willed movement for the opposite side of the body is in a portion of this cortical region referred to as the motor strip. Just in front of this region in the lower lateral frontal lobe, which is dominant for language, is the so-called Broca area where the complex muscle control of the oral, lingual, and pharyngeal musculature is initiated, thus permitting the utterance of formed oral-verbal sounds. Damage to this brain region in the adult results in poverty of word production and difficulty in producing the appropriate sequence of sounds associated with normal speech. The afflicted patient is aware of these errors because he has intact auditory centers in the temporal lobe, enabling him to hear his mistakes. Terms such as Broca's aphasia, motor aphasia, and oral-verbal apraxia have been applied to this clinical state. There have also been reports that such frontal lesions in adults may result in impaired reading (Benson, Brown, and Tomlinson 1971). An apparently constitutional (inborn) form of oral-verbal apraxia has been observed in children (Yoss and Darley 1974).

Corpus Callosum

As will be documented further, the adult brain is not physically symmetric or equal in functional performance. This asymmetry is most marked for language, which is most commonly lateralized to the left hemisphere, and extrapersonal spatial perception, which is most commonly lateralized to the right hemisphere (Kimura 1973). Since the sensory information from a body area and the volitional control over it are related, for the most part, to the opposite cerebral hemisphere, a means of communication between the hemispheres would be useful. For this task, the so-called commissural system is important, with the major area operative in the mature brain being the large bundle of cross-connecting nerve fibers referred to

as the corpus callosum. Further discussion of the asymmetry of brain function and of the results of physical separation of the corpus callosum is deferred to the discussion below on the role of dominance in reading retardation.

One school of thought on acquired language disturbance in the adult (aphasia) suggests that "disconnection" may occur between the language-involved areas (temporal-parietal-frontal lobes) of the hemisphere dominant for language or by disruption of the callosal fibers between the two hemispheres distributed to critical language mediating structures, or by both mechanisms combined (Geschwind 1965).

From the above, then, it can be seen that at the gross neuroanatomic level the structures with potential significance in producing language retardation include: the brain stem reticular activating system, both mesial temporal lobes, portions of the thalamus bilaterally, perhaps the corpus callosum, the cerebral cortex (specifically in the hemisphere dominant for language), the visual association area, the auditory association area, specific motor portions of the frontal lobe, the sensory region of the parietal lobe, and, most significant for reading retardation, the angular gyrus of the parietal lobe.

Neurophysiology and Neurochemistry

The basic unit of the nervous system is the nerve cell or neuron. It consists of a cell body, short projections referred to as dendrites, and a projection of variable length, along which the nerve impulse travels, called the axon. The axon is encased by a fatty substance known as myelin, which has a beaded appearance. Because of its fatty content it appears grossly white, so areas of the nervous system made up of nerve axons or tracts are referred to as white matter. At birth all the nerve cells of the central nervous system are present, and with aging they progressively decrease in number. But the process of myelination of a nerve axon is not complete until late childhood or early adolescence. Some of the behavioral concomitants associated with specific language disability have been attributed to a "delay" in the usual process of myelination. Whether this is the case remains undocumented.

Nerve cells may act either to excite or to depress the activity of other nerve cells. They do not come into direct contact with one another but are separated by an ultramicroscopic space. Excitation or depression of nerve

cell activity is carried out through the release of a chemical substance from one nerve cell to the next. This process has been called neurohumoral or neurochemical transmission. The junctional region between one nerve cell and the next is the synapse. A single nerve cell may receive excitatory and inhibitory input from as many as 200 to 400 nerve cells. Whether an individual nerve cell fires will depend upon the algebraic sum of the excitatory and inhibitory impulses reaching the cell at any given moment.

At the present time at least five neurohumoral transmitters have been identified--acetylcholine, norepinephrine, dopamine, serotonin, and gamma aminobutyric acid. Other compounds have been suggested to have importance in neurochemical transmission and no doubt still more remain to be identified. The observation that in Parkinson's disease there is, within the basal ganglia, a relative reduction of dopamine content has led to the successful treatment of this disorder with the compound L-dopa, which precedes dopamine in the chemical chain of events (Cotzias, Papavasiliou, and Gellene 1969). Since an overabundance of dopamine or a relative lack of acetylcholine may be associated with clinical findings opposite to those observed in parkinsonism (excessive involuntary movement), it has been postulated that a relative balance exists between these two neurochemical systems (dopamine and acetylcholine) regarding certain aspects of voluntary and involuntary movement. Psychiatry, with its recent observations that certain chemical transmitters apparently are important to some disorders of mood (Schildkraut 1969), as well as neurology, is in the process of assessing a wide variety of disorders that may represent an "imbalance," either genetic (inborn) or acquired, of these biologically active chemicals. It is not surprising, therefore, as will be discussed further, that disorders of learning and language have been included among those of potential neurochemical disturbance.

As a consequence of neuronal activity, changes in electrical potential occur which may be amplified and recorded by the electroencephalograph. It has been a useful diagnostic tool in a variety of structural and physiologic disorders of the brain. As a result, it was a logical instrument to use in assessing children with reading retardation. However, interpretation of clinical electroencephalograms varies somewhat from institution to institution and agreement has not always been possible on the significance of the finding of certain brain wave patterns. The ability of the electroencephalograph to predict brain areas of gross overactivity or underactivity is rela-

tively great. However, in the vast majority of children or adults with specific language disability, no generally accepted abnormality is seen.

Some authors have suggested that the relatively high occurrence of some otherwise nonspecific electroencephalographic patterns in dyslexic children indicates an underlying structural or physiologic defect (Hughes 1968). Such may be the case, but the cause and effect relationship has not been demonstrated because the routine electroencephalogram pattern does not offer predictive value for reading failure. The primary use of routine electroencephalography is to determine the presence or absence of gross cerebral dysfunction or of an underlying seizure disorder that may explain wholly or in part academic underachievement.

More recently, derivatives of the electroencephalogram such as the brain's electrical response elicited by a flash of light before the eyes (visual evoked response) (Conners 1970), computerized spectral analyses of averaged brain electrical activity (Sklar, Hanley, and Simmons 1972), or wave forms associated with tasks of visual discrimination (Lombroso et al. 1974) have been carried out in an attempt to uncover deviations from the norm that would be predictive of reading failure. Kooi (1974) has observed a case of acquired reading disturbance in which routine electroencephalography showed only mild nonspecific abnormalities in the left hemisphere. However, detailed analysis of visual evoked responses was associated with variation in the elicited wave form over the left parietal region. Such studies may provide physiologic evidence that may be correlated in a casual and predictive manner with at least certain forms of language underachievement. The scientific significance of this work, although intriguing, awaits further clarification. Furthermore, an intelligent prediction would be that such tests of a single modality of sensory input will "pass" as "normal" those children with higher integrative visual, auditory, or cross-modality variants from the norm who have demonstrated academic underachievement.

A further word of caution is warranted. In the zeal to find a test of "basic intelligence" that is free from cultural bias, a criticism of many current standard IQ tests, extrapolation from visual evoked response data to intelligence has been suggested (Ertl and Schafer 1969). At this time no such correlation is justified (Engel and Henderson 1973), and at best the use of electroencephalogram derivatives as a measure of intelligence is speculative.

Although not directly related to electroencephalography, eye movements can be recorded at the time of the electroencephalogram or separately with additional electrical equipment. The question of the role of extraocular muscle control as a prevalent cause of reading failure can be clearly answered—it is at best very low. Studies of those who are proficient and efficient readers have shown that their eye movements while reading may be quite erratic (Fries 1963). Furthermore, critical studies of ocular muscle training as a primary method of reading remediation have shown it to be lacking (Sullivan 1972).

Suggested Etiologic Factors in Specific Language Disability

A variety of causes for reading failure in intellectually intact individuals has been suggested. No single one has been proved and more than one cause may result in identical clinical symptoms (Table 1).

Malformed or Malfunctioning Angular Gyrus

Extrapolation from studies on acquired alexia in adults would suggest a possible physiologic or structural abnormality, most commonly located in the angular gyrus of the hemisphere dominant for language. To date no anatomic data supporting this view are available, as anatomic descriptions of the brains of children with antemortem reading disability are extremely rare (Drake 1968). The attempts by specialized forms of electroencephalogram studies to support a physiologic defect localized to the left parietal lobe, although tantalizing, have yet to be fully elucidated.

Prenatal, Perinatal, or Postnatal "Brain Damage"

That reading or other language retardation might be secondary to brain injury occurring in utero, at delivery, or in early childhood has received much attention. Frequently this factor has been used in explaining some forms of temporal lobe seizure disorders. However, in the case of temporal lobe seizures, pathologic evidence of mesial temporal lobe injury has been demonstrated, presumably secondary to a lack of blood supply and therefore oxygen at or around the time of birth (Margerison and Corsellis 1966). However, direct evidence for such injury in those with specific language disability is lacking.

Some authors have commented on a higher frequency of complications

TABLE 1. SUGGESTED ETIOLOGIC FACTORS IN SPECIFIC LANGUAGE DISABILITY

Malformed or malfunctioning angular gyrus*
Prenatal, perinatal, or postnatal "brain damage"
Nutritional deficiency
Impaired dominance*
Delayed maturation*
Biochemical imbalance*

* Possibly genetic.

during pregnancy or delivery among children who later prove to have language disability (Kawi and Pasamanick 1958). However, such retrospective studies have not been confirmed uniformly and the conclusions drawn remain inferential (Ingram, Mason, and Blackburn 1970; Lyle 1970). Seldom in my experience or that of my colleagues has there been a major complication of pregnancy, delivery, or early childhood illness which could be invoked as clearly "damaging" to the central nervous system in children with specific language disability. Furthermore, because of the multipotential capability of the developing nervous system, severe insult to the nervous system may occur with little demonstrable physical, intellectual, or language impairment. This last observation makes more difficult the acceptance that "minimal" or "occult" central nervous system injury often can result in devastating effects on clinical language performance.

Nutritional Deficiency

Nutritional lack on the part of the pregnant mother or her infant has also been suggested as playing a role in later neurologic deficit in the child (Chase 1973, Nutrition Symposium 1973, Winick and Rosso 1969). Neurologic complications do appear more commonly in those infants of low birth weight, and birth weight may be adversely affected by malnutrition. How great a factor this is in well-developed countries or in those cases where cultural deprivation has been considered the cause of language deficiency remains uncertain.

Toxic substances that presumably have damaged the central nervous system—including lead (David, Clark, and Voeller 1972) and a variety of allergens (Kittler and Baldwin 1970)—have also been implicated in children with behavioral and language abnormalities. However, these observa-

tions remain limited and are of uncertain significance in specific language disability.

The first postulated causal factor, namely that of a physiologic deviation from the norm in brain function, and the following factors have been suggested as being operative on a genetic basis. It should be borne in mind that all hereditary disorders are genetic, i.e., determined by the chromosome makeup of the offspring's cells derived from the two parents. However, not all genetic disorders are hereditary. That is, a new chromosome mutation unique to the child may occur without evidence of similar dysfunction in the parents or siblings.

Impaired Dominance

Early descriptions of children with retarded reading ability frequently referred to "mixed dominance." In his landmark observations, Orton (1937) noted an unusual number of youngsters with poor reading skills who preferred the left hand, left foot, and right eye, or similar such "crossed" preference for eye, hand, and foot use. Orton suggested that perhaps this physical finding indicated incomplete dominance or lateralization for language. He extended the thesis further, suggesting that poor lateralization for language could contribute to or be casually related to poor reading performance. However, there have been later observations that today make Orton's supposition tenuous.

First, consider the relationship between hand preference and language dominance. In the context of this discussion, dominance refers to that half of the brain that, if physically removed, essentially destroyed, or rendered temporarily inactive through pharmacologic means, results in loss of language function. As previously stated, the left hemisphere essentially controls the right half of the body and vice versa. Thus, one would predict that those who write with the right hand would have language centered in the left brain. The actual figure is that 98 percent of right-handed adults have language lateralized to the left brain. But among those who use the left hand for written expression, 70 to 75 percent have language in the *left* hemisphere, an observation counter to the "rule" of cross-brain control (Brown and Simonson 1957).

Why there should be a predilection for left hemisphere language representation remains unclear. However, it has been observed that the upper surface of the left temporal lobe (auditory region) is definitely larger in

surface area in approximately 65 percent of both adult and fetal human brains (Geschwind and Levitsky 1968, Witelson and Pallie 1973). This finding has been interpreted by some to indicate a genetic anatomic predilection for left brain language function.

Additional investigation into which hemisphere is dominant for language has included dichotic listening tests. By presenting simple and complex linguistic and nonlinguistic sounds to both ears, it has been found that the right ear in those with left brain language dominance is superior to the left ear in the comprehension and recall of auditory linguistic input. Contrariwise, the left ear and right hemisphere are superior in tasks sampling nonlinguistic sounds, such as music (Kimura 1961, 1973).

If, as Orton (1937) suspected, children with dyslexia have reading difficulty because they lack the usual lateralization of language function to one hemisphere, one would predict that in tests of ear lateralization poor readers early in life would be bilaterally equal in ear performance for language sounds. On the other hand, nondyslexics should demonstrate right ear superiority for auditory language. However, Bakker (1973) has demonstrated the opposite. Young children with average reading performance demonstrated no ear preference, i.e., no language lateralization, and older children of average reading skill demonstrated right ear superiority. However, the young poor readers showed definite right or left ear preference, that is, early lateralization for auditory language. Bakker then suggests that perhaps bilaterality of language function early in life is the "normal" mode of language evolution regarding laterality, whereas early lateralization may be related to reading failure.

That the young brain may have the capacity for transferring language function from one hemisphere to the other is attested to by the not infrequent observation that severe left brain injury, including surgical removal before the age of 8 to 10 years, although followed initially by severe language impairment, may be followed by a return of virtually normal language performance. The assumption is that the right or previously nonlanguage dominant hemisphere has the capacity to assume this function. This flexibility or plasticity is unique to the young nervous system and is apparently lost in the mature brain. However, Kinsbourne (1971) has shown, in some cases of improvement in adult acquired language disturbance, that the improvement appears dependent on right hemispheric function that presumably was not operative preceding the brain injury.

Thus, dominance as used in this discussion refers to brain lateralization

for language and is imperfectly related to eye, hand, or foot preference. Thus it is not surprising that studies of children with mixed laterality (eye, hand, or foot preference) show no higher incidence of reading retardation than the general population, or the reverse (Belmont and Birch 1965). This observation then suggests that there is no cause and effect relationship between mixed laterality and poor reading performance. Although many poor readers may have mixed laterality, this finding may represent the same process that induced impaired reading rather than acting as the casual factor itself.

A comment is appropriate at this juncture on the unique studies of right and left brain function carried out by Sperry, Gazzaniga, and Bogen (1969) on human subjects with uncontrolled seizures, in whom the corpus callosum was severed in an attempt to remedy the epileptic disorder. These carefully studied patients have demonstrated that the right nonlanguage dominant hemisphere may have the capacity to comprehend visual linguistic material and execute oral or visual commands appropriately with the left hand controlled by the right hemisphere. However, visual information restricted to the right hemisphere cannot be verbalized by the subject with a "split brain" because the capacity for oral expression resides in the "speaking" left language dominant hemisphere.

Delay of Maturation

Since many of the linguistic errors in letter formation, reading, and spelling made by children with specific language disability are similar to those errors made by children of younger chronologic age, it has been suggested that the retardation represents a lag in maturation of the central nervous system (Kinsbourne 1973). Such developmental lag could be the result of unusual delay in the establishment of neuronal interconnections or of neurochemical transmitter formation, or in the myelination process. The etiology could be acquired, i.e., nutritional, or secondary to putative injury, or genetic. However, the last has more commonly been invoked. From a descriptive standpoint, this view is not without merit. It is additionally supported by the male preponderance of reading retardation regardless of socioeconomic background, and it is generally accepted that the rate of maturation in the female exceeds that of the young male. One overly simplistic attempt to support such a thesis would be to examine the electroencephalogram patterns of retarded readers. Since maturational changes

occur in the electroencephalogram associated with chronologic maturation (Corbin and Bickford 1955), it might be conceivable that the pattern of a 10-year-old retarded reader would more closely resemble that of a 6-year-old otherwise normal child. No such correlation exists. However, routine electroencephalography may be too crude a measure for such an analysis.

There is, however, the potential danger of extending the hypothesis of delayed maturation to the point of presuming that little need be done regarding intervention, because with passage of time the developmental lag will be made up and performance will improve. Some retarded readers do evidence, around the time of adosescence, apparent improvement in their language deficit. This change may not be due to physiologic maturation, however, but rather may represent acquired compensatory skills. Furthermore, such compensated poor readers often still show evidence of language deficit, most commonly in the form of poor spelling. Also, it is clear that an as yet undetermined (but relatively large) number of such language-impaired children mature into equally impaired adults. Therefore, despite the descriptive validity of this view and its associated value of not assuming a "damaged" central nervous system, the reader is cautioned not to be lulled into the expectancy that emotional support and tincture of time will alleviate the language deficit. Lack of adequate intervention carries the risk of perpetuation of language retardation, and such inaction constitutes educational negligence (Jansky and de Hirsch 1972).

Biochemical Imbalance

As alluded to above, we live in an era of biochemical revolution that has not neglected the potential implication of the chemistry of the nervous system with regard to emotional and physical health and disease. It would be unusual to find, in a disorder marked by such a dearth of basic information, that theories regarding altered brain chemistry would not be proposed. This does not imply that they are invalid but rather that they are current and reflective of the times, warrant interest, and still demand scientific documentation.

Principally for disorders of behavior and attention, biochemical hypotheses have been presented. The clinical observation that certain alerting agents have a calming effect on overly active, inattentive children has generated considerable interest in an explanation (Bradley 1937). One thesis is that the brain stem arousal system, normally rich in the neurotransmitter

norepinephrine, may be deficient in this amine. Thus, drugs that stimulate or simulate norepinephrine activity may correct the deficiency and result in clinical improvement. Other neurotransmitters have also been implicated (Wender 1972). Since cortical alertness in large measure depends on the reticular activating core, alteration in the normal functioning of this system could result in disordered attention states with consequent implications on academic performance in general and possibly specific language function. Such a thesis has been suggested for hyperkinesia. Since a portion of the reticular activating system apparently plays a role in recent memory function and learning, disorders of higher behavior might also result (Silver 1971, Wender 1972, 1973). However, even in hyperkinesia actual demonstration of alteration in biochemical function is yet to be documented, and thus remains speculative.

With regard to reading failure, controlled studies of methylphenidate (Ritalin) in nonhyperkinetic poor readers demonstrated that this drug had no beneficial effect on reading performance (Gittelman-Klein 1972). As a result, at this point there is no documentation suggesting value in the use of psycho-active drugs in the treatment of primary reading failure.

At an even more theoretical, cellular level, recent studies have suggested a basic cellular chemical response associated with learning in animals which may have implications for future research and eventually may result in clinical application. However, they are presented more from the standpoint of curiosity than for direct application.

One such study was that of McConnell (1962), was observed that naive flatworms that had ingested ground flatworms previously trained to a maze problem, subsequently learned the maze more rapidly than their noncannibalistic peers. The implication is that there was "something" within the previously trained flatworms that facilitated the cannibalistic flatworms to solve the problem more rapidly. That "something" may have been a biochemical agent that developed as a consequence of learning in the initial group of trained flatworms. More recent and sophisticated studies at the cellular level by Hydén have suggested that basic protein (RNA) changes occur, within brain cells, which are temporally and anatomically related to learning. Specific protein changes were observed at the level of the synapse which theoretically might modify nerve transmission activity. Protein deprivation in the diet resulted in diminished learning performance, which was temporally linked to a reduced rate of specific protein change. Furthermore, animals that were genetically slow learners demonstrated differences in the

ways in which these cellular protein changes occurred (Hydén 1967, 1973, Hydén and Lange 1970). To what extent such changes play a role in human learned responses, including those of language, remains unclear. However, the prospects of future investigation are intellectually intriguing.

Before leaving the general area of theories of language disability one should inspect the question whether genetic factors play a role in determining language performance and behavior. Studies in the genetics of dyslexia, although fraught with technical difficulty, have suggested familial aggregates with male preponderance (Hallgren 1950). At lower levels of the animal kingdom (namely the fruitfly), Benzer (1971) has shown genetic mutations with behavioral characteristics—including those in a group he considered "hyperkinetic." Language, of course, could not be assessed, but such studies reinforce the belief that human behavior, including intelligence and various skills related to language, may have a genetic basis. This does not imply that environmental factors, including education, have no role; seldom does a genetic substrate operate independently of environmental conditions.

Language Acquisition

Now that some background has been given in functional neuroanatomy, neurophysiology, and neurochemistry as they pertain to language and memory, it is worthwhile to review in general what may be the usual evolutionary steps in acquiring, retaining, and using language (see Fig. 4 and 5). The diagrams provided, as well as the text, are simplified and carry risk of error. However, this view of the probable steps involved in language development provides some insight into the types of psychogic and language assessment carried out in suspected language disability. Furthermore, it relates to commonly recommended efforts toward remediation.

For all practical purposes, three of the recognized five senses play a role in language development and use—vision, hearing, and tactile-kinesthesia (touch and spatial sense of the body parts used in oral and written communication). It seems that hearing and vision play a greater role than that of touch and kinesthesia. By definition, the responsible factor for specific language impairment is not the peripheral receptors for these senses.

Having been stimulated, the peripheral receptors send their mode of sensory information to the brain regions previously referred to, which are also included in Figure 4. Note that the left brain is represented since it is

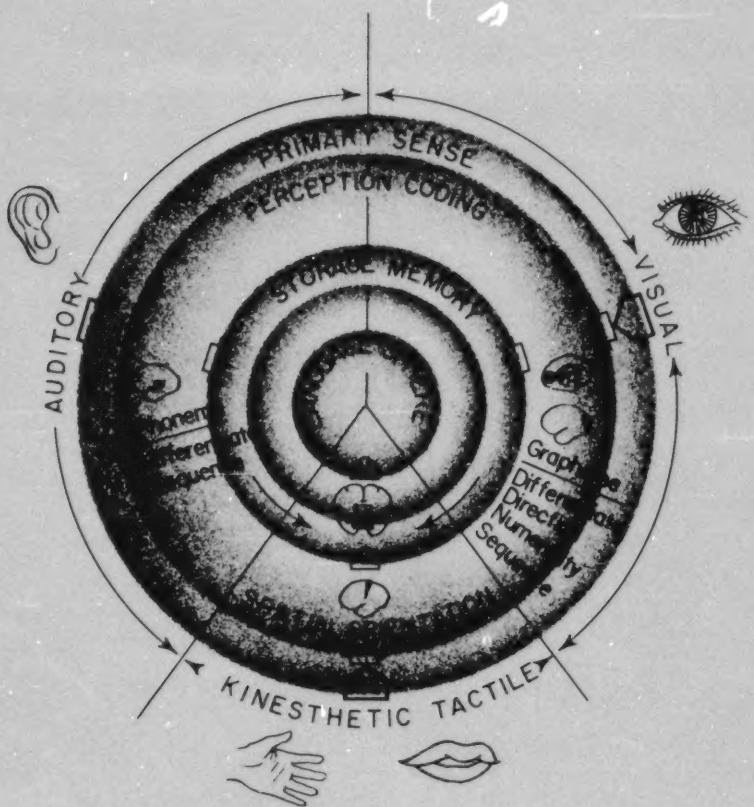


Figure 4. A schematic representation of the anatomic sites, sensory modes, and the processing involved in the perceptual aspects of language. (*Courtesy Mayo Clinic.*)

apparently predisposed to carry out language functions. At the primary visual and auditory cortical regions, the elemental nature of the stimulus is recorded. In the primary visual cortex, intensity, configuration, and direction of visual stimuli are recorded. In the primary auditory cortex, intensity, tonality, and perhaps directionality of acoustic signals are recorded. This process of centrally receiving the basic qualities of the stimulus may be referred to as primary cortical perception. At the behavioral level, the ability to "attend" to the stimulus, that is, to focus on one of many stimuli at any

given moment, seems essential to perception regardless of the modality. Next, in the adjacent cortical association areas, the sensory experience is analyzed for what we may call meaning. As the name implies, these brain regions adjacent to the primary cortical centers "associate" the elemental properties of the stimulus with prior experience. For those stimuli with linguistic value, symbolic interpretation seems to occur in or near the association cortex. This coding of information may be related to activation and development of neuronal interconnections (so-called reverberating nerve circuits), to altered cellular protein or amine chemistry, or more likely to processes as yet unknown.

Regarding auditory language, the primary unit to be handled is the phoneme—the basic sound unit with potential language value that is shorter than a syllable. Each phoneme to which the infant is exposed must be centrally differentiated from every other, as in p, b, v, t, and must be perceived as distinct. However, Liberman (1973) has pointed out that in oral expression the unit used may be at the syllabic level, as in the pronunciation of the word "bat" as a single syllable, rather than consisting of five potentially separate phonemes if each of the basic three phonemes were ineptly sounded out. Furthermore, the sequence of sounds must be appreciated so that the child centrally hears the difference between refrigerator and fridgereator. This sequencing of perceived sounds lays the foundation for the oral expression of similar sequences of sounds peculiar to the language of the child's culture. This auditory perceptual process potentially can begin with the earliest sound experiences of the newborn (de Hirsch 1970). Studies of the language of the congenitally deaf suggest that this early access to linguistic acoustic experience may be fundamental for normal rate of language development, with higher order language such as generalization and syntax suffering (Lenneberg 1967).

Over time these acoustic experiences become associated with ongoing visual and tactile experiences (cross-modal association) so that perceived sequenced language sounds are linked with objects seen and felt in the environment. By the age of 2 or 3 years most children are able to duplicate or use spontaneously in oral expression a variety of speech sounds and also are capable of combining them into comprehendible words and can express themselves in three- or four-word sentences. What is auditorally expressed linguistically in simple vocabulary to the child at this age is also fairly well understood by the youngster. This implies that the sounds, sequences of sounds, and their acoustic linguistic values have been stored and are

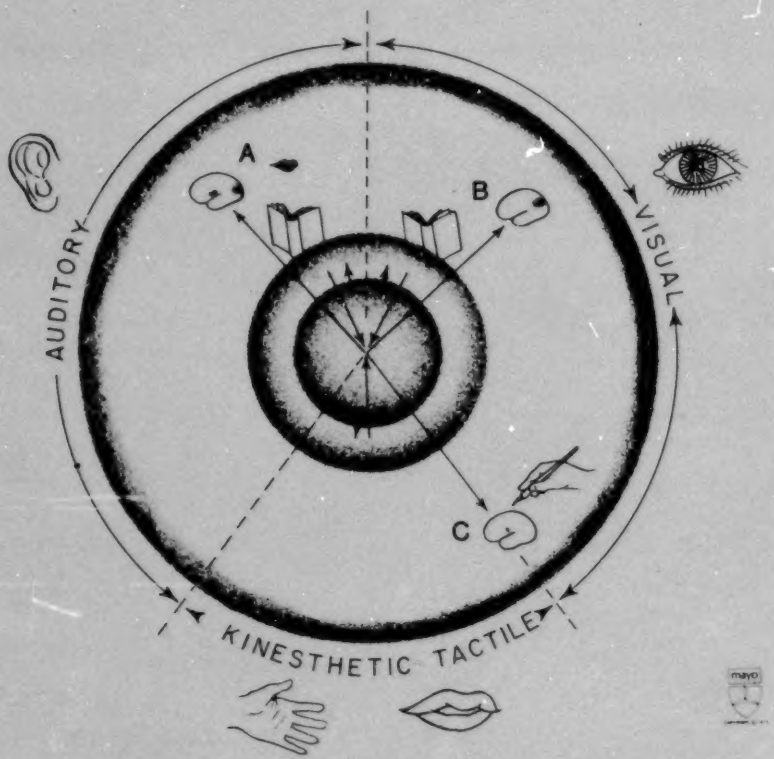


Figure 5. A schematic representation of examples of expressive language: *A*, oral reading indicating brain areas involved with dependence on visual and auditory associations; *B*, silent reading; *C*, spontaneous writing. (*Courtesy Mayo Clinic.*)

available for retrieval, as well as the visual and tactile-kinesthetic associations made with the acoustic language stimulus. The storage process is called memory and consists of at least two and perhaps more stages—immediate or recent, and remote. The brain regions involved in the language value and symbolic meaning of the speech sound will be the primary auditory receptive area and its surrounding auditory association area. It has already been stated that, in the adult, recent memory implies bilaterally intact inner temporal lobes and bilaterally intact portions of the thalamus. However,

these regions apparently operate more on the basis of the totality of experience than in its linguistic substrate within any single sensory modality.

The ability to carry out oral-verbal expression implies four conditions: first, that the parietal tactile-kinesthetic areas are operating normally regarding the location in space of the muscles involved in producing speech sounds; second, that the frontal lobe motor strip where these muscles are represented is intact; third, that the region in front of the motor strip known as Broca's area is intact (permitting a fair degree of oral fluency and precision); and finally that the child is able to hear what he has said and recognizes its accuracy.

Within the visual mode, perception of objects and symbolic auditory association with the object potentially begin within the first one to two years of life. By the age of four or five most youngsters begin to associate specific phonemes and phoneme combinations with their written representation, known as graphemes. However, this association implies that the primary visual cortex and its association area can differentiate one grapheme from another as well as appreciate the directionality of the written symbol. A simple example would be that of a vertical line with an attached circle, which could represent four separate lower case letters; b, p, q, and d. Many children, early in the development of their attempts at reading and writing, may make errors of letters differentiated primarily by directionality, yet when confronted with the two separate symbols can indicate that they are individually distinct. Of greater significance in specific language disability is disturbance of the memory for the letter, its phonemic equivalent, and (higher still) its symbolic value when combined with other letters. Numerality of perceived graphemes likewise must be perceived and retained, as in differentiating tree, trees, and tries. Just as auditory perception implied recognition and retention of sequence of acoustic language signals, the same obtains for the visual system if the grapheme stimulus is to be recalled and recognized as to its symbolic value. Clearly the phrase "sacred God" has an entirely different meaning than "scared dog." Yet the two phrases are separated only in the transposition of two letters in each word.

Thus in carrying out a visual language task the central graphemic perception, including differentiation of one grapheme from another, its direction, numerality, and sequence must first be perceived. Then it must be held in recent memory, associated with prior visual experience in remote memory, and associated with relevant auditory and tactile-kinesthetic experiences be-

fore there can be final appreciation of symbolic meaning. To what extent visual perception in this sense plays a role in oral-verbal expression is not clear. Adults with acquired brain lesions in the visual association area may demonstrate little deficit in spontaneous oral-verbal expression, whereas reading and oftentimes spelling suffer. The spelling deficit is not based on dysfunction of the parietal kinesthetic representation for the hand or frontal representation for volitional use of the hand. It is symbolic visual recall of the grapheme to be expressed in written form that suffers.

Within the tactile-kinesthetic mode, the primary sensory cortex must correctly analyze where the oral-lingual-pharyngeal structures and preferred hand for writing are located in space for the motor cortex to then direct the use of these structures in spoken and written language. Sensorimotor association must be made with language sounds that are duplicated from the environment and assist in vocal production of speech. Similarly, visual perception in concert with kinesthetic cues will affect the ability to replicate, orally and manually, visual language experiences. That kinesthetic input may reinforce visual or auditory memory, at least in the adult, can be demonstrated by the common experience of being asked to spell a word and being able to do so only after tracing the word in space as though one were writing it.

Thus normal language function implies that each of the steps in perception, association within and between sensory modalities and memory within and between sensory modes, operates efficiently and that there is an intact sensorimotor system for expression. That disabled readers may be considered as having relative deficits along the steps of auditory and visual processing has been supported by Boder (1971) who, by analyzing the spelling of words considered to be familiar and unfamiliar to the subject, determined if a child had primary deficit in the auditory, visual, or both perceptual modes.

In the schematic diagram provided, one could consider the congenitally blind subject as having that wedge representing the visual mode totally inoperative, in which case, theoretically, the auditory and tactile-kinesthetic segments of the language sphere would occupy relatively larger areas. In assessing language development, the attempt is made to investigate each of these steps and their relative cross-modal efficiency. Although this would be simplistic, one could then conceive that language retardation may occur as a result of variance from the "norm" at any of these levels such that the wedge within a given mode from that point on is narrowed.

Alternatively, the quality of language processing may differ so that the tonal density (in the schematic figure) varies, and thus language acquisition and performance are different enough from that of the general population to relatively disable an individual in the quality and efficiency of language performance. From such a view, one need not invoke the concept of damage to the nervous system but might rather recognize individual physiologic differences in each of these phases of language function. Thus, independent of intellectual ability, as measured by standard intelligence tests, this physiologic variance may place an individual at a relative disadvantage, compared to his peers, in oral-verbal expression, spelling, writing, and reading. Some members of society will be tone deaf and others possess perfect pitch. With language, too, humans will differ in the various language skills, and there may be enough of a variance from the norm to render an individual handicapped in comparison to his intellectual and chronologic peers.

Let me suggest an analogy. I once pursued an interest in music. Although possessing some skill and applying himself with vigor, I soon realized that my aspiration of reaching concert quality could never be achieved because I lacked the native skills to reach that level of proficiency. In a society in which most members were particularly facile in musical ability, I would have been a handicapped member of that society. No doubt I would have been looked upon with scorn because I could not measure up to social standards of musical performance. Fortunately for me, such was not the case for my reading skill and visual memory, which permitted—with motivation—academic and social success. However, in a society that values reading skill at even the earliest stages of academic experience, the lot of the poor reader is not a happy one. Reprobation leads to loss of personal esteem, and interpersonal relations suffer for the "defective." Without remediation of language skills, lack of academic interest must surely follow as well as the tendency to seek rewards outside those defined by a seemingly castigating society. It is in this way that I prefer to view the specific language-disabled person, with a bias toward a genetic-constitutional (not necessarily hereditary) physiologic variance from socially defined normative language performance.

From the model provided above, one would predict the following types of behaviors in those with specific language disability: difficulty in following oral or written instruction; spelling marked by reversals, omissions, substitutions, and slow rate; oral reading characterized by reversals, omissions, substitutions, and slow rate; shortened attention span; lowered frustration

tolerance, particularly when placed in a language stress situation; misalignment of letters, numbers, decimal values, and punctuation marks; confusion of computation signs; conceptual difficulty with units of time and measurement of space; right-left disorientation; awkwardness in fine movements including manual performance in both pictorial and literary tasks; and articulation deficits in spontaneous speech, for those with auditory processing difficulties. As testimony to the basic intellectual potential of the child at this end of the language spectrum, he may accurately, in the course of contextual speech, use words of relative sophistication, but the same word presented aurally or visually would be as incomprehensible as the word dyslexia itself. Not unexpectedly, such behaviors are cardinal among children labeled as having "specific language disability" (Critchley 1970). From these behaviors one must consider the means by which academic achievement can be assessed fairly. Thus with a child who is a slow, inefficient reader, classroom experiences and tests perhaps should be given orally. The child who speaks slowly or writes slowly should be given time to verbalize, orally or in writing, his level of comprehension in academic matters; in reality, there are few situations in life on which an immediate response based on language analysis is dependent.

Prevalence of impaired language function of sufficient deviation from the mean to require remediation is not known accurately. Rates of occurrence of specific language disability will depend on what criteria are used for including the "handicapped." Arbitrary determinations of the percentage of children at a given age who fall more than two years behind the norm on a given task provide only that information, and do not tell us how many children actually possess specific reading or language disability. Degrees of relative impairment may occur which will be included by some data collectors and rejected by others. Figures range from 5 to 15 percent of the school age population (Gomez 1972). Such information, however, should not be the major determinant of whether an individual child should be entitled to additional educational services. Yet state educational policies may set limits on how many youngsters may receive special services. This constitutes administrative convenience and may have little correlation with the real size of the problem. Any child who manifests language retardation should be given the opportunity to develop his skills to their limit. As stated in the definition, the intellectual potential in these children is at least average and for some is significantly above average. Their unique language development and consequent perspective offer potential significant benefits to

society (Rawson 1968, Thompson 1969). Our system of delivery of educational services should be geared to maximize this potential. Even if one accepts the lower figure of 5 percent of the school-age population demonstrating specific language disability, this would mean that reading retardation constitutes a greater health problem than the combined occurrence of mental retardation, cerebral palsy, and epilepsy. Surely it cannot be ignored.

Much has yet to be learned about the anatomy, physiology, and biochemistry of the various phases of language determinants. It is with this in mind that the Planning Committee for the World Congress on Dyslexia, as part of the 25th annual meeting of the Orton Society to be held in cooperation with the Mayo Clinic in November of 1974, has arranged its program. It aims to have experts on each of the topics provide a "state of the art" presentation summarizing salient previous work, current status, and future needs for clarification of the structure of language, the anatomy underlying language function, memory, auditory perception, visual perception, and cross-modality learning, the emotional aspects of language disability, and educational treatment and results. Hopefully the comments briefly set forth in this paper will stimulate the reader to attend that meeting or to peruse the published proceedings for further and more accurate insights into the determinants of this important health and education problem.

References

Bakker, D. J. 1973. Hemispheric specialization and stages in the learning-to-read process. *Bull. Orton Soc.* 23:15–27.

Belmont, L. and Birch, H. G. 1965. Lateral dominance, lateral awareness, and reading disability. *Child Dev.* 36:57–71.

Benson, D. F., Brown, J. and Tomlinson, E. B. 1971. Varieties of alexia: word and letter blindness. *Neurology (Minneap.)* 21:951–957.

Benson, D. F. and Geschwind, N. 1969. The alexias. In *Handbook of Clinical Neurology*, Vol. 4, eds. P. J. Vinken and G. W. Bruyn. New York: John Wiley & Sons. pp. 112–140.

Benzer, S. 1971. From the gene to behavior. *JAMA* 218:1015–1022.

Boder, E. 1971. Developmental dyslexia: a diagnostic screening procedure based on three characteristic patterns of reading and spelling. In *Learning Disorders*, Vol. 4, ed. B. Bateman. Seattle: Special Child Publications. pp. 297–342.

Bradley, C. 1937. The behavior of children receiving Benzedrine. *Am. J. Psychiatry* 94:577–585.

Brown, J. R. and Simonson, J. 1957. A clinical study of 100 aphasic patients. I. Observations on lateralization and localization of lesions. *Neurology (Minneap.)* 7:777–783.

Chase, H. P. 1973. The effects of intrauterine and postnatal undernutrition on normal brain development. *Ann N.Y. Acad. Sci.* 205:231–244.

Conners, C. K. 1970. Cortical visual evoked response in children with learning disorders. *Psychophysiology* 7:418–428.

Corbin, H. P. F. and Bickford, R. G. 1955. Studies of the electroencephalogram of

normal children: comparison of visual and automatic frequency analyses. *Electroencephalogr. Clin. Neurophysiol.* 7:15–28.

Cotzias, G. C., Papavasiliou, P. S. and Gellene, R. 1969. Modification of parkinsonism —chronic treatment with L-dopa. *N. Engl. J. Med.* 280:337–345.

Critchley, M. 1953. *The Parietal Lobes*. London: Edward Arnold (Publishers).

Critchley, M. 1970. *The Dyslexic Child*, 2nd ed. London: William Heinemann (Medical Books).

David, O., Clark, J. and Voeller, K. 1972. Lead and hyperactivity. *Lancet* 2:900–903.

de Hirsch, K. 1970. A review of early language development. *Dev. Med. Child. Neurol.* 12:87–97.

Drake, W. E., Jr. 1968. Clinical and pathological findings in a child with a developmental learning disability. *J. Learning Disabilities* 1:486–502.

Engel, R. and Henderson, N. B. 1973. Visual evoked responses and IQ scores at school age. *Dev. Med. Child. Neurol.* 15:136–145.

Ertl, J. P. and Schafer, E. W. P. 1969. Brain response correlates of psychometric intelligence (letter to the editor). *Nature* 223:421–422.

Frank, J. and Levinson, H. 1973. Dysmetric dyslexia and dyspraxia: hypothesis and study. *J. Am. Acad. Child Psychiatry* 12:690–701.

Fries, C. C. 1963. *Linguistics and Reading*. New York: Holt, Rinehart and Winston.

Geschwind, N. 1965. Disconnexion syndromes in animals and man. *Brain* 88:237–294; 585–644.

Geschwind, N. and Levitsky, W. 1968. Human brain: left-right asymmetries in temporal speech region. *Science* 161:186–187.

Gittelman-Klein, R. 1972. Short and long term effects of methylphenidate on cognitive performance in learning disability children. Read before the XX International Congress of Psychology.

Gomez, M. R. 1972. Specific learning disorders in childhood. *Psychiatr. Ann.* 2:49–65.

Hallgren, B. 1950. Specific dyslexia ("congenital word blindness"): a clinical and genetic study. *Acta Psychiatr. Neurol.* Suppl. 65:1–287.

Hughes, J. R. 1968. Electroencephalography and learning. In *Progress in Learning Disabilities*, Vol. 1, ed. H. R. Myklebust. New York: Grune & Stratton. pp. 113–146.

Hydén, H. 1967. Biochemical changes accompanying learning. In *The Neurosciences: A Study Program*, ed. G. C. Quarton, T. Melnechuk and F. O. Schmitt. New York: Rockefeller University Press. pp. 765–771.

Hydén, H. 1973. Organized complexities and protein response of brain cells (abstract). Fourth International Meeting of the International Society for Neurochemistry.

Hydén, H. and Lange, P. W. 1970. Protein changes in nerve cells related to learning and conditioning. In *The Neurosciences: Second Study Program*, ed. F. O. Schmitt. New York: Rockefeller University Press. pp. 278–289.

Ingram, T. T., Mason, A. W. and Blackburn, I. 1970. A retrospective study of 82 children with reading disability. *Dev. Med. Child Neurol.* 12:271–281.

Jansky, J. and de Hirsch, K. 1972. *Preventing Reading Failure: Prediction, Diagnosis, Intervention*. New York: Harper and Row, Publishers.

Kawi, A. A. and Pasamanick, B. 1958. Association of factors of pregnancy with reading disorders in childhood. *JAMA* 166:1420–1423.

Kimura, D. 1961. Cerebral dominance and the perception of verbal stimuli. *Can. J. Psychol.* 15:166–171.

Kimura, D. 1973. The asymmetry of the human brain. *Sci. Am.* 228:70–78.

Kinsbourne, M. 1971. The minor cerebral hemisphere as a source of aphasic speech. *Arch. Neurol.* 25:302–306.

Kinsbourne, M. 1973. Minimal brain dysfunction as a neurodevelopmental lag. *Ann. N.Y. Acad. Sci.* 205:268–273.

Kittler, F. J. and Baldwin, D. G. 1970. The role of allergic factors in the child with minimal brain dysfunction. *Ann. Allergy* 28:203–206.

Kooi, K. 1974. Personal communication.

Lenneberg, E. H. 1967. *Biological Foundations of Language*. New York: John Wiley and Sons.

Liberman, I. Y. 1973. Segmentation of the spoken word and reading acquisition. *Bull. Orton Soc.* 23:65–77.

Lombroso, C. T., Symann-Louett, N., Gascon, G. G. and Matsumiya, T. 1974. Dyslexia: differences in visual evoked responses to meaningful and nonmeaningful stimuli (abstract). *Neurology (Minneap.)* 24:349.

Lyle, J. G. 1970. Certain antenatal, perinatal, and developmental variables and reading retardation in middle-class boys. *Child Dev.* 41:481–491.

Magoun, H. W. 1963. *The Waking Brain*. 2nd ed. Springfield, Illinois: Charles C Thomas, Publisher.

Margerison, J. H. and Corsellis, J. A. N. 1966. Epilepsy and the temporal lobes: a clinical, electroencephalographic and neuropathological study of the brain in epilepsy, with particular reference to the temporal lobes. *Brain* 89:499–530.

McConnell, J. V. 1962. Memory transfer through cannibalism in planarians. *J. Neuropsychiatry* 3(Suppl. 1):S42–S48.

Nutrition Symposium. 1973. Mom's diet: key to child's growth; neonatal retardation tied to fetal malnourishment. *Med. World News* 14:28–29; 33; 36.

Olds, J. and Milner, P. 1954. Positive reinforcement produced by electrical stimulation of septal area and other regions of rat brain. *J. Comp. Physiol. Psychol.* 47:419–427.

Orton, S. T. 1937. *Reading, Writing and Speech Problems in Children: A Presentation of Certain Types of Disorders in the Development of the Language Faculty*. New York: W. W. Norton and Company.

Rabinovitch, R. 1973. Personal communication.

Rawson, M. B. 1968. *Developmental Language Disability: Adult Accomplishments of Dyslexic Boys*. Baltimore: Johns Hopkins University Press.

Schildkraut, J. J. 1969. Neuropsychopharmacology and the affective disorders. *N. Engl. J. Med.* 281:197–201; 248–255; 302–308.

Silver, L. B. 1971. A proposed view on the etiology of the neurological learning disability syndrome. *J. Learning Disabilities* 4:123–133.

Sklar, B., Hanley, J. and Simmons, W. W. 1972. An EEG experiment aimed toward identifying dyslexic children (letter to the editor). *Nature* 240:414–416.

Sperry, R. W., Gazzaniga, M. S. and Bogen, J. E. 1969. Interhemispheric relationships: the neocortical commissures; syndromes of hemisphere disconnection. In *Handbook of Clinical Neurology*, Vol. 4, eds. P. J. Vinken and G. W. Bruyn. New York: John Wiley and Sons. pp. 273–290.

Sullivan, J. 1972. The effects of Kephart's perceptual motor-training on a reading clinic sample. *J. Learning Disabilities* 5:545–551.

Thompson, L. J. 1969. Language disability in men of eminence. Orton Soc. Reprint No. 27, from *Bull. Orton Soc.* 19:113–118.

Van Buren, J. M. and Borke, R. C. 1969. Alterations in speech and the pulvinar: a serial section study of cerebrothalamic relationships in cases of acquired speech disorders. *Brain* 92:255–284.

Van Buren, J. M. and Borke, R. C. 1972. The mesial temporal substratum of memory: anatomical studies in three individuals. *Brain* 95:559–632.

Victor, M., Adams, R. D. and Collins, G. H. 1971. *The Wernicke-Korsakoff Syndrome: A Clinical and Pathological Study of 245 Patients, 82 With Postmortem Examinations*. Contemporary Neurology Series No. 7. Philadelphia: F. A. Davis Company.

Wender, P. H. 1972. The minimal brain dysfunction syndrome in children. I—The syndrome and its relevance for psychiatry. II—A psychological and biomedical model for the syndrome. *J. Nerv. Ment. Dis.* 155:55–71.

Wender, P. H. 1973. Some speculations concerning a possible biochemical basis of minimal brain dysfunction. *Ann. N.Y. Acad. Sci.* 205:18–28.

Winick, M. and Rosso, P. 1969. The effect of severe early malnutrition on cellular growth of human brain. *Pediatr. Res.* 3:181–184.

Witelson, S. F. and Pallie, W. 1973. Left hemisphere specialization for language in the newborn: neuroanatomical evidence of asymmetry. *Brain* 96:641–646.

Yoss, K. A. and Darley, F. L. 1974. Developmental apraxia of speech in children with defective articulation. *J. Speech Hear. Res.* (in press).

The Evolution of Human Capacity for Language

Brenda K. Sladen

Assistant Professor, Department of Pathobiology
The Johns Hopkins University School of Hygiene and Public Health

This article is based on a paper presented at the 23rd National Conference of the Orton Society, Baltimore, 1973.

Specific dyslexia may be part of a set of genetically-influenced human variations in which the different forms have their own differing advantages (Sladen 1970, 1972). Such variation in individual capacity for learning certain language skills ultimately should be explained in terms of how we adapted to life and environments during our evolution. I shall discuss some of the background of our ideas about evolution of the capacity for language, and examine some recent developments in several fields of study that relate to human language—human evolution, human ecology, and linguistics. The aim is to encourage people to stand back from the view of specific dyslexia as a handicap in the classroom. A long-term evolutionary view is sought, instead, in the hope that more people will inquire whether specific dylexia, being so common and under genetic influence, must have (or must have had in the past) some adaptive aspects.

The human lineage may have begun some fifteen million years ago, but few relevant fossils are known from the first 11 million years (Washburn and Jay 1968, Washburn and Dolhinow 1972). The earliest fossils that certainly are very close to, or on, our lineage date to some 2.9 million years ago from Africa (Figure 1). At present these are called *Homo* sp., and one skull is known from this earliest time (Leakey 1973). *Homo habilis* dates to almost 1.8 million years ago, and the earliest known *Homo erectus* to just before 1.5 million years ago, in Africa. From after 1.5 million years ago *Homo* specimens are known from outside Africa, first in Java; and much of their presence in various parts of the world is known only from stone tools. *Homo sapiens* may date back some 300,000 years or more, but our sub-species *Homo sapiens sapiens* is little more than 35 thousand years old, according to present evidence. A closely related earlier form *Homo sapiens neanderthalensis* may not have been directly ancestral to present humans.

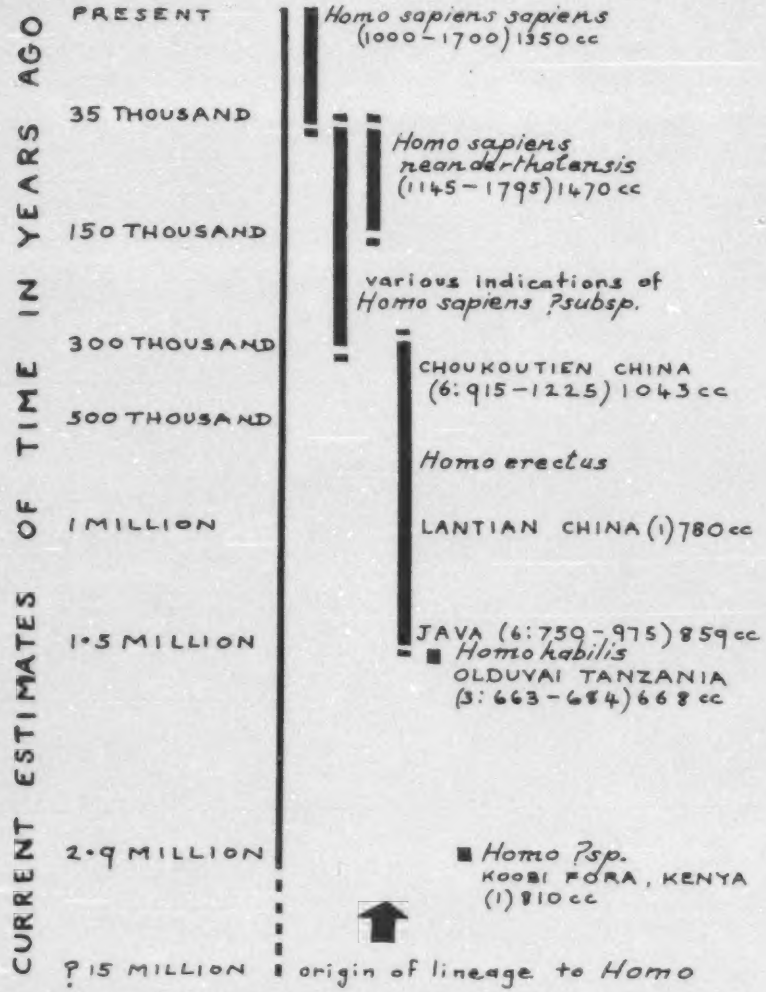


Figure 1. Kinds of *Homo* Discussed, and Their Cranial Capacities. The bars represent approximate ranges of years ago from which specimens have been identified. The numbers in parentheses are the numbers of skulls, or parts of skulls, whose capacities have been measured, followed by the range of the sizes in cubic centimeters. The number outside the parentheses is the mean size in cubic centimeters. The sizes of young skulls were adjusted to probable adult sizes. For comparison, chimpanzees have a mean cranial capacity of 375 cc and gorillas, 496 cc. (Data from Tobias 1971; Leakey 1973.)

During the 3 million years of this fossil record, probably the hand was changing, but the legs may have been quite like our own (Leakey 1973). Simple stone choppers and flakes may well have been used from the beginning of the time (Howell 1972), and large mammals eaten (Butzer 1971). It is in the head and neck that the best-recognized evolution occurred. Figure 1 gives estimates of the sizes of the cavities that hold the brain and its supporting materials, called the cranial capacities. (Some of these estimates are from incomplete skulls.) The increase in cranial capacity in *Homo* over almost 3 million years, was from some 800 to 1400 cc; in part the increase must have been due to increase in height. It also was partly due to a great expansion of the new cortex (or neocortex) of the brain. (The cortex representing that of earlier mammals, with the associated areas in the stem of the brain, is called the limbic system; see e.g. MacLean 1973).

In tracing possible changes involved in the evolution of ability to communicate by language, we have to account for at least the following aspects: 1) how speech differs from communication by sound in non-human primates; 2) the usefulness of the earliest stages of evolution towards speech; 3) the evolution together of the vocal apparatus, the reception of speech sounds, controls of speech in the brain, and the lengthening of childhood.

How Speech Differs from Sound Communication in Other Primates

The sounds that other primates use appear to communicate information about emotions, social positions, and territory and spacing, but little about the rest of the environment (Marler 1965; Lancaster 1968; McLean 1973; and Bates 1970). In several species of nonhuman primates, sounds have been shown to be controlled from the limbic system of the brain. There is some evidence also that human nonverbal sounds that express emotion, such as high-pitched screams of fear, still are controlled in the limbic system (Robinson 1967a, b). Apparently our speech was added to the sound system of other primates, and it basically gives information about environments. Its control developed in the new cortex, while the emotion-conveying non-verbal sounds apparently remained, and still are controlled by the limbic system. Human speech uses lower frequencies of sound than are used for most sounds conveying emotions.

Initial Advantages of Different Sound Communication

The other primates from which the human lineage evolved must have eaten plants, mostly. In living non-human primates almost all that the individual gathers, the individual eats. But at some time in human evolution, probably before 3 million years ago, males became hunters of animals, while continuing to eat plants as well. Hunting large animals requires use of large areas of land. Females apparently kept the main responsibility for gathering plants, and did not move so far as the hunters. Food must have been shared among the family, at least. In present hunter-gatherers, males often collaborate in groups for hunting, and the prey is divided up among the hunters and their families. In eating much more meat along with plants, and in sharing with the family (and often with others) the food hunted and gathered, humans differ from other primates.

Wolves and Cape hunting dogs hunt in groups of males that return to the females and share food. They deposit scents on their trails and have remarkable ability to follow them back and to recognize individuals by smell. But primates have a very poor sense of smell, though good vision. So we ask: "How did early human ancestors who hunted find their way home, being poor in sense of smell?" One way would have been to mark the environment with visual signs (Haldane 1952, 1955). Perhaps long before three million years ago human ancestors were carrying stones and bones as tools and weapons, and perhaps they slashed parts of their environment—trees, the ground, and prominences such as rocks. Thus there could have been an association of using the hand, the eye, and perhaps a sound uttered at the same time for identification of a specific part of the environment. An association of a sound with an environmental feature would be something new in primate communication. Even a very limited ability to name and describe objects would be extremely useful in helping a group to use a large area of land. Separated members would be helped in rejoining in pre-assigned places. "Even on the rudimentary level of a simple place name, the naming of objects could have had great selective advantage to a form that was moving into a way of life based on tool use, hunting and gathering, and food sharing" (Lancaster 1968, pp. 455–457).

Hewes (1973) makes a good case for the old theory that gestures with the hands and mouth could have been important as supplements to evolving capacity for language. Tool and weapon "names" could have been gestured. He emphasises the role of mimicry of animals in the behavior

of some human societies, noting that this would have been a good way of "naming" animals without verbal sound. (See Birdwhistell 1970 for a discussion of how much information can be transmitted without sound.)

Modern humans make only about 18 to 40 separate sounds in the range of verbal sound, the number depending on how they are defined (Liberman 1970; Lieberman et al. 1972). If a single sound stands for an aspect of the environment, not many aspects can be indicated. But in speech these units of sound are combined into groups, or words, and it is each word that represents or qualifies an environmental feature, or connects other words. The possible combinations of elements of sound into words are so great that a seemingly unlimited number of words can be assigned meanings—just consider all that is named, and in different ways in all our languages! Combinations of phonic elements to represent items was a major progression in the development of human capacity for language (Hockett and Ascher 1964).

Vocal Apparatus

We have noted that words are built from a limited number of sounds, between 18 and 40 according to definition. This number of sounds requires several structures in the vocal apparatus, and that evolved slowly too. Lieberman and Crelin (1971) Lieberman et al. (1972) attempted to reconstruct the parts of the vocal apparatus of *Homo sapiens neanderthalensis* (who may not have been directly ancestral to present humans). They concluded that neanderthals would have had a very short pharynx which severely restricted their production of certain vowels. These vowels are particularly important for high-speed transmission of information in speech. According to Hewes (1973), Crelin (unpublished) believes that a *Homo sapiens* from some 300,000 years ago in Germany had a vocal apparatus like that of present humans, but that *Homo erectus* could not have produced all the sounds of human speech.

High Speed of Communication in Language

In speech, information is passed at about ten times the rate at which separate sounds can be identified. If spoken words are recorded, and the apparent units of sound are separated, these cannot be rebuilt into new

recognisable words (Lieberman 1963). This discovery provided a clue as to how a person can recognize words fast. In analysis of the spoken word "băg," the sound for "ă" appears very shortly after the "b" sound begins, then the "g" sound appears, and the three sounds overlap for much of the word. Such condensation into simultaneous signalling allows the high speed of reception (Liberman et al. 1967; Liberman 1970, Cooper 1972). The vowels "a," "i," and "u" that resonate from our long pharynx, whose anterior wall is the long base of the tongue, are responsible for much of the production of this simultaneous signaling. A species or subspecies that has a short pharynx and so presumably cannot produce this high-speed signaling is not likely to have the neural arrangement of the cortex to receive and analyse such signaling either. Therefore Lieberman et al. (1972) conclude that the population from which their neanderthal specimens were drawn could not have had our form of speech with very high rates of transfer of information.

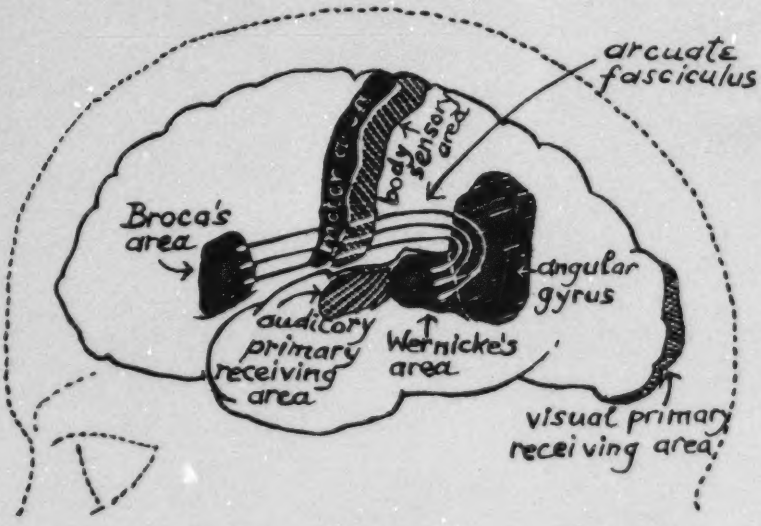


Figure 2. Diagram of the surface of the left side of the neocortex in a person with strong left dominance in cortical control of language. Broca's and Wernicke's areas are in the left cortical hemisphere only in such individuals; the other areas marked here are bilateral.

This concept of overlap apparently applies also to the structure of sentences, so that by means of common grammatical construction, clues to the presence of several related ideas in a sentence appear near the beginning of the sentence (Liberman 1970). Certain neurological organization must be basic for those grammatical consistencies that are found through all forms of language (as suggested by Chomsky 1957).

Cortical Control of Language [1]

Language depends on an integration of input from the senses of sight, of sound, and of movement of the vocal apparatus. Figure 2 is a diagram of the surface of the left neocortex that shows areas where primary pathways from those sense organs are received there. These, called *primary sensory receiving areas*, are concerned apparently with identifying the nature and quality of stimuli from the eyes, from the ears, and from body-sensory cells. Around the primary sensory receiving areas are *association areas* in which sensory stimulation is integrated with stimulation from other areas. Further areas that are surrounded by association areas are called *association of association areas*, and much of the control of language and its memory is located there. One part is *Broca's area*, near the body sensory and motor areas of the cortex, close to the motor representation for the organs of speech of the throat and mouth. If Broca's area is damaged, speech is slow and labored, articulation is crude, and small grammatical words and endings are missing. Some of the grammar of sentences may be missing too, but language may be understood.

Wernicke's area is part of the association of association area near the primary receiving area for sound. It is connected to the visual sensory receiving area via the *angular gyrus*. Damage to Wernicke's area results in speech that may sound normal superficially, but is devoid of reasonable meaning. Small words may be substituted such as "knife" for "fork," and meaningless new "words" appear. The person may not understand speech.

Therefore it is thought that the following pathways are involved in the processing of language in the brain. If an object is seen, the visual pattern is identified in the visual cortex, and transferred to the angular gyrus, which then arouses an auditory form of the pattern in Wernicke's

[1] See Geschwind 1968, 1972; Luria 1970.

49

area. An auditory pattern is transferred from Wernicke's area through a bundle of nerves called the *arcuate fasciculus* to Broca's area. There the spoken pattern is aroused and passed to the parts of the motor cortex that control the vocal apparatus, and then the word corresponding to the vision is spoken. When a spoken word is heard, the primary auditory area of the cortex arouses the pattern in Wernicke's area. In speaking that word there is a transfer of information to Broca's area. If the heard word is to be spelled and written, the pattern in Wernicke's area is transmitted to the angular gyrus and then to the visual cortex. Finally, when a word is silently read, the auditory pattern probably is aroused in Wernicke's area.

It appears that this high degree of intersensory transfer is performed best in one side of the cortex only, instead of on both sides as is usual in brain control (Geschwind 1968; Masland 1968; Ettlinger 1972). This is usually the left side. In the majority of people the right hemisphere processes sensory perception of environmental features that are not involved in language, such as musical sound (Milner 1962). Much of the corresponding part of the non-dominant hemisphere apparently is concerned with awareness of spatial relationships (e.g. Hécaen et al. 1956).

Lengthening of Childhood

The period of long childhood development must have extended as our ancestors approached modern humans. One advantage is that it gives a long time for learning, and speaking greatly affects one's ability to learn. (A human child begins to speak at about 18 months of age). Another advantage is that it gives a long time for growth of the brain.

The size of the infant's head is limited by the size of the opening in the mother's pelvis, which is limited by the function of the pelvis in locomotion. At birth the human brain is about a quarter of its adult size, but it is densely packed. During the first six months it doubles its weight and at age 2.5 years it is three quarters of the adult size, and at 5 years it is 90 per cent of the adult size. Some of this growth is due to expansion of areas between nerve cells, and increase of contact among cells by extensive development of connections. The areas of the cortex that are slowest to complete their development apparently are areas that evolved last. Some of these are the "association of association areas" involved in processing language. In fact, completion of the sheaths of the nerves of these areas continues to

a slight extent between the ages of 40 and 50! This slow development must affect the comparative ease with which children recover some functions after brain damage, particularly in language. Also, spoken language is learned much more easily before the age of about 16 years than it is later on in life (Penfield and Roberts 1959, Lenneberg 1969). (Penfield emphasises how we waste biologically-based opportunities in our educational systems, by usually waiting to teach children second languages until the time of ease of learning language has passed. He recommends foreign-speaking schools for the earliest years.)

Right and Left Sideness; Lack of Dominance

Some people note that it would have been an advantage for makers of tools to have one hand for gripping, the other for precision work; others note that it would be healthy to eat and shake hands with one hand and perform dirty tasks with the other. But handedness could have developed mostly because of the lateral dominance that seems best for language. Handedness could have been influenced by the proximity of Broca's area to areas of motor control, and the association of hand gesturing with language could have been involved. Hand preference could have evolved over a long time, or it could have developed as the neurological organization for high speed speech became established. Some time before *Homo sapiens sapiens* appears in the fossil record, some non-neanderthal population(s) of *Homo sapiens* may have been undergoing slow and complex adjustments that resulted in high-speed speech. Neanderthals were successful and advanced forms; their rapid disappearance about 35,000 years ago may have been due to the rise of *Homo* with more effective capacity for language. Did the cortical elaboration concerned with high speed speech interfere with control of any of the skills that already had proved very successful for hunting-*Homo?* Such skills would include shaping of rocks into tools (skills upon which sculpture became based?), construction of shelters (engineering construction), butchering (skills upon which surgery became based?), miming of the behavior of species of animals (skills upon which acting is partly based), and memory of spatial layout of the land (but not memory of specifically what is to the right and what is to the left—see Corballis and Beale 1971). I list these behaviors because there is a growing feeling (but not proof) that these skills, which depend a great deal on under-

standing spatial relationships, are often rather outstanding in many people whose language skills are deficient. These deficiencies in language may result from much of the control of language being in both hemispheres of the cortex in these people (Orton 1937 and summary in Sladen 1972). And since specific dyslexia is sex-influenced, being at least three times more prevalent in males, the hunters of the species, I suggest very tentatively that the evolutionary organization that immediately preceded the emergence of *Homo sapiens sapiens* could have involved not only all the adjustments for high-speed language, but also could have required retention of skills that operate best with bilateral brain controls. The eventual solution was a complex, genetically-based polymorphism, with parts of populations best organised for language. Other parts of the populations could have sacrificed lateral dominance for better performance in these other skills.[1] Most methods of teaching reading, writing, and spelling make the large proportion of people with specific dyslexia (they probably amount to ten per cent of most populations) look as if they are damaged in some way. I believe that we need a much more positive evaluation of these people, a full assessment of their superiority in other skills.

[1] This is not meant to imply that people who have specific dyslexia are all of a kind—one can imagine that at least differing degrees of bilateral cortical control could cause differing patterns of difficulty with language.

References

Bates, B. C. 1970. Territorial behavior in primates: a review of recent field studies. *Primates* 11:271–284.

Birdwhistell, R. L. 1970. *Kinesics and Context: Essays on Body Communication*. Philadelphia: University of Pennsylvania Press.

Butzer, K. W. 1971. The Lower Omo Basin: Geology, fauna and Hominids of Plio-Pleistocene formations. *Naturwissenschafter* 58:7–16.

Chomsky, N. A. 1957. *Syntactic Structures*. The Hague: Mouton.

Cooper, F. S. 1972. How is language conveyed by speech? In *Language By Ear and Eye*, eds. J. F. Kavanaugh and I. G. Mattingly. Cambridge, Massachusetts: M.I.T. Press.

Corballis, M. C. and I. L. Beale. 1971. On telling left from right. *Sci. Amer.* 224:96–104.

Ettlinger, G. 1972. *The Transfer of Information Between Sense-Modalities: A Neuropsychological Review*. New York: Plenum.

Geschwind, N. and W. Levitsky. 1968. Human brain: left-right asymmetries in temporal speech region. *Science* 161:186–187.

———. 1972. Language and the brain. *Sci. Amer.* 226:76–83.

Haldane, J. B. S. 1952. The origin of language. *Rationalist Annual*, pp. 38–45.

———. 1955. Animal communication and the origin of human language. *Science Progress* 43:385–401.

Hécaen, H., W. Penfield, C. Berrand and R. Malmo. 1956. The syndrome of aproctognosia due to lesions of the minor cerebral hemisphere. *Archs. Neurology and Psychiatry* 75:400–434.

Hewes, G. W. 1973. Primate communication and the gestural origin of language. *Current Anthropol.* 14:5–24.

Hockett, C. F. and R. Ascher. 1964. The human revolution. *Current Anthropol.* 5:135–168.

Howell, F. C. 1972. Recent advances in human evolutionary studies. In *Perspectives on Human Evolution*, eds., S. L. Washburn and P. C. Dolhinow. New York: Holt, Rinehart and Winston.

Lancaster, J. 1968. Primate communication systems and the emergence of human language in *Primates: Studies in Adaptation and Variability*, ed., P. Jay. New York: Holt, Rinehart and Winston.

Leakey, R. E. F. 1973. Evidence for an advanced Plio-Pleistocene Hominid from East Rudolf, Kenya. *Nature* 242:447–451.

Lenneberg, E. H. 1969. On explaining language. *Science* 164:635–643.

Liberman, A. M. 1970. The grammars of speech and language. *Cong. Psych.* 1:301–323.

Liberman, A. M., D. P. Shankweiler, and M. Studdert-Kennedy. 1967. Perception of the speech code. *Psych. Rev.* 74:431–461.

Lieberman, P. 1963. Some effects of semantic and grammatical context on the production and perception of speech. *Language and Speech* 6:172–187.

Lieberman, P., and E. S. Crelin. 1971. On the speech of Neanderthal man. *Linguistic Inquiry* 2:203–222.

Lieberman, P., E. S. Creli, and D. G. Klatt. 1972. Phonetic ability and related anatomy of the newborn and human adult, Neanderthal man, and the chimpanzee. *Amer. Anthropol.* 74:287–367.

Luria, A. R. 1970. The functional organization of the brain. *Sc. Amer.* 222:66–78.

MacLean, P. D. 1973. The brain's generation gap: Some human implications. *Zygon* 8:113–127.

Marler, P. 1965. Communication in monkeys and apes in *Primate Behavior*, ed., I. DeVore. New York: Holt, Rinehart and Winston.

Masland, R. L. 1968. Some neurological processes underlying language. *Ann. Otorhinol. and Laryngol.* 77:787–804.

Milner, B. 1962. Laterality effects in audition. In *Interhemispheric Relations and Cerebral Dominance*, ed., V. B. Mountcastle. Baltimore: Johns Hopkins Press.

Orton, S. T. 1937. *Reading, Writing and Speech Problems in Children*. New York: Norton.

Penfield, W. and L. Roberts. 1959. *Speech and Brain Mechanisms*. Princeton, New Jersey: Princeton University Press.

Robinson, B. W. 1967(a). Vocalization evoked from forebrain in *Macacamulatta*. *Physiol. Behav.* 2:345–354.

Robinson, B. W. 1967(b). Neurological aspects of evoked vocalizations. In *Social Communication Among Primates*, ed., S. A. Altmann. Chicago: University of Chicago Press.

Sladen, B. K. 1970. Inheritance of dyslexia. *Bull. Orton Soc.* 20:30–40.

——— 1972. Some genetic aspects of dyslexia. *Bull. Orton Soc.* 22:41.

Tobias, P. V. 1971. *The Brain in Hominid Evolution*. New York: Columbia University Press.

Washburn, S. L. and P. C. Dolhinow (*eds.*). 1972. *Perspectives on Human Evolution 2*. New York: Holt, Rinehart and Winston.

Washburn, S. L. and P. C. Jay (*eds.*). 1968. *Perspectives on Human Evolution 1*. New York: Holt, Rinehart and Winston.

A SALUTE TO ANNA GILLINGHAM

At a luncheon during the 24th Annual Conference of the Orton Society in Baltimore, Md., November 8, 1974, tributes were paid to Anna Gillingham by the three leaders among her students, sometimes called "the intrepid triumvirate," who have carried forward her work in the teaching of children with language learning difficulties and the preparation of other teachers to help them. Jane McCelland, after a brief statement of her own appreciation, introduced Sally Childs as "keeper of the keys to the Gillingham lore and materials," from the East, and Beth Slingerland, a valiant veteran from the West. All three are recognized as authorities the country, and even the world, over.

1. ". . . A Pupil for Life."

Jane McCelland

I am very pleased today to be asked to share with Sally Childs and Beth Slingerland this opportunity to pay tribute to my teacher, Anna Gillingham, a truly remarkable woman. When asked to marshall my thoughts and feelings about her I found it hard to stop short of a volume. Sally probably knows more about her than anyone, and Beth also knew her intimately, so nothing I could say would be very different, as I join them in appreciation of her.

I still feel close to Anna in so many ways. She was fond of our family and we, parents and children, loved having her visit. She told stories of her youth as a prairie child and of her devoted parents, and we listened with endless enjoyment. She also fielded questions with the greatest skill when asked about the Persian Wars, ancient history, Latin literature and classical authors. Her fund of nature lore was impressive. She knew of trails long forgotten by even forest rangers in our National Parks, and we think of her every time we visit one. She showed us photographs of herself in breeches and highlaced boots as she tramped on mountain trails. When we are hiking the children often comment that she may be around the next bend. I still like to think of her that way.

She was always teaching about teaching, and in our household "Annaisms" abound. On reading rapidly: "A child must walk before he can run."

On the need for presenting *all* of something complicated: "You can't learn the difference between one thing." On repetition: "If you present something new on Friday, it will be an acquaintance by Monday and an old friend by the following Friday," but also: "If you ask a child to do something four times, you are nagging, and no one appreciates a nagging teacher." There were also: "Language is only as strong as its weakest link," and, "A teacher is one who helps another know," and finally, "Your success will depend on your skill as a teacher." She was challenging us constantly, as we struggled to master her skills and achieve her wisdom. I never knew her to tire, physically or mentally. Instead, she thrived on her "call," her "crusade," and we were the tools to help her attain her great, almost impossible, goal.

I am reminded of a time when one of my students was having difficulty with Latin. "What are you going to do about it?" she demanded with stern visage and a firm voice. I stammered something about never having studied Latin. She suggested that I simply get a copy of the student's book and learn it with him—"That's what teaching is all about!" She was right, as usual, master psychologist that she was. My struggles to help that student gave me considerable insight. His interest was spurred by my feeble efforts, and each day he got help from his Latin teacher, "to clear up some things for Mrs. McClelland." As a result, he learned Latin very well, though I never did.

When Anna gave me my certificate, I said that I didn't want it to signify that I had finished learning from her; I wanted to be her pupil for life. That appealed to her, and thereafter she always wrote to me as "Dear Pupil-for-Life."

One of the most important things I learned from her was respect for her clear evaluation of anything new that was presented to her and her willingness to change with the times. The last revision of her life's work, the Manual, was the remarkable feat of her declining years.

I am indebted to her in more ways than I can count!

2. The Anna Gillingham I Knew

Sally B. Childs

The topic, "The Anna Gillingham I knew" presents me with a problem since I knew Miss Gillingham for almost 50 years and in a variety of roles—first as my teacher and principal in school, later as friend and advisor, professional mentor, and finally as colleague and associate. This gamut is so broad that I have cut it down and propose to consider centrally her career as a professional and her impact in the field of education.

First, she was a rugged individualist, which is a very useful attribute in a pioneer, and one which came naturally from her Quaker background with its emphasis on conscience and service. Her association with Bessie W. Stillman began in 1903 and lasted until Miss Stillman's death in 1947. During these years, their association included their trips together, their shared living and their mutual and complementary professional interests. Bessie Stillman was the sensitive and devoted teacher of language skills and Anna Gillingham the great organizer and teacher of mathematics. Late during the teens Miss Stillman contributed the first efforts at teaching those we now call dyslexics and Anna Gillingham, utilizing the techniques and insights of psychological testing, contributed some understanding of the make-up of those recognized as bright students who could not master language skills. There are many points of special interest.

For us here, the outstanding one is Anna Gillingham's association with Dr. Orton. When I rediscovered her as an adult, she had already come to recognize the existence of children with language disabilities and with Miss Stillman she had begun to work out ways of helping them overcome their problems. As usual Anna Gillingham followed her interest with her usual zeal. She "discovered" Dr. Orton when he was still in Iowa. After corresponding with him about their mutual interests, she began to consult him in person as soon as he moved to New York City. Thus began an association which lasted until his death in 1948.

One of her outstanding qualities was a rigorous intellect. She had been well-trained at Swarthmore and at Radcliffe before doing her graduate work at Teachers College, Columbia. Consequently she was better able than most to make searching investigations and evaluations of the various contribu-

tions of others to the infant field of language problems. The only time I ever knew her to be unduly influenced was when I suggested that it might be difficult to explain vertical reversals in terms of Dr. Orton's theory. Her uncharacteristic answer was to deny the existence of vertical reversals!

Another outstanding characteristic of Anna Gillingham was her vigorous insistence on upholding standards even when it was difficult. Those who attacked her usually did so from lack of understanding of her theory and sometimes of her practice, or because they wanted quick and easy solutions. They ascribed ideas and positions to her which she never held, frequently misunderstood her seeming arrogance and were unwilling to do the hard work often needed. They frequently compromised and ended up in self-defeating situations.

Few people ever appreciated Anna Gillingham's patience and persistence. She would display endless kindness and understanding of the difficulties children encountered, though she always expected them to do their utmost. After her sight failed so badly that she was for all intents and purposes blind, she refused to admit it, and carried on despite the handicap. One outstanding example was the delivery to her home in one batch of nearly a half million cards for drill packs and phonic word boxes, which she then proceeded to collate into their respective sets. She never knew about the errors in the sets reported by baffled purchasers since her secretary was able to protect her from that embarrassment. The customers never knew that the reason for her undertaking this monumental effort herself was the cost of having the work done professionally, which was prohibitively expensive before the invention of collating machines.

For a woman of her day, she was the archetype of the true investigator and innovator. She had the kind of mind which gradually focused on a problem and narrowed it into definable limits. We all know now that probably the most important step in the application of the scientific method is the recognition and formulation of the problem. She worked many years ago on this premise. Then at the next stage she was both imaginative and tireless in tracking down possible relevant factors in any solution. The first outstanding example of this was her use of the new method of measuring intelligence just imported from France into America about 1912. It had been used first in France and later at the Vineland School in New Jersey to identify retarded children. She saw no reason why the test could not equally well identify superior ability and went on to use it and prove this point. This test was of course the Simon-Binet in the Goddard or Vineland

translation at first, revised in 1916 by Terman and known by his name. New interpretation of this test in reference to children with specific language disability very quickly established itself as an essential part of the process of identifying such children. She also used additional measures of ability in various areas, such as reading, spelling, and arithmetic, but their use was more widely accepted. Anna Gillingham became one of the first, practising school psychologists (perhaps the first) in this country, long before such a position was officially recognized by name.

One aspect of the work of Anna Gillingham and Bessie Stillman which is not generally recognized is that they discovered and valued certain principles of learning, especially in their relation to specific language disability which are IMPLICIT but not EXPLICIT in their work. Sometimes a term used later to designate some particular aspect of their work was never actually used but the concept suggested in her Manual and explained to me in detail by Anna Gillingham was unmistakable. We should consider some of the most important of these in order that we may understand their contribution and the way in which some of my work descends from theirs. It has been a matter of surprise to me to discover that they had actually anticipated some of what I was sure were my own best thoughts, but had not stated them in recognizable or usable form. Still, they must have gotten through to my consciousness somehow.

My first example is "The Discovery Technique" or "Distech" for short. Anna has said that the teacher must never TELL the child a new fact or principle if it is anything he can figure out for himself; he should be given the opportunity to do so. I have worked out how to teach teachers to do this as well as how important it is. Gillingham and Stillman also emphasized the importance of routines and their role in building up self-confidence in these baffled, frustrated children. This is now emphasized by all who work constructively with these children.

The insistence on "pure" sounds, uncontaminated by preceding or following elements such as /ŭ/, was away ahead of its time, and is even yet not fully appreciated. Zangwill summed it up after an early conference in Baltimore when he said that he had learned that when you blend the sounds /bŭ/ /a/ /tŭ/ you get bu-a-tu not "bat." Gillingham and Stillman were weak on speech theory but they had the right ideas, based on observation and good sense. Clearly embodied in their organization of Chapters 2 and 3 in the manual is that the most efficient teaching is the development of a general principle. To assure its understanding before introducing

modifications and special cases which belong to its more general application is important.

The establishment of a limited selection of phonetic forms of English which are dependable and consistent, must precede the addition of the multiple responses of Chapter 3. This procedure also applies to the presentation of spelling rules and probabilities. Gillingham and Stillman used the term probability but it is obvious that Bessie Stillman's long vowel tables, inadequate as they were, constituted a first step in a right direction. Before the age of computers, it would have been virtually impossible to collect and classify the data summarizing the spellings of the sounds of English, but Miss Stillman was on the right track and I am sure that my work on the probabilities stems exactly from her inspiration.

In a similar way the ABC System, which I first developed for classroom spelling in 1948–1949 at Anna Gillingham's request, even though modified and improved in the more recent version was a subconscious utilization of their "regular" spellings of Chapter 2, the "scientific choices" suggested but never really presented as the spelling companion for the reading of Chapter 3, and finally the "learned words" which contained irregularities which could not be produced by the application of choices. Naturally I was able to profit later by recognition of some of the inadequacies inevitable in the pioneering stages. More valid categories could then emerge, helped into being by the computer studies more recently available.

The incorporation of "detached syllables" and their location in real words provided an invaluable body of material for use with older students. It was too small and quickly outgrew the available syllables and but it grew into the Childs "noncewords" which include the syllables, rare phonetic words and additional ones made up when no others could be found. This material really tests the ability of students to READ, and not merely to remember from some vague past.

It is surprising to many people that neither Anna Gillingham or Bessie Stillman ever used the term "coding," though their work is considered the archetype of the application of this concept. It is possible to fit their insights into a coding presentation with practically no change whatever.

Another point of much controversy was their insistence on a "standard" or dictionary pronunciation in all work during lessons. Anna Gillingham vehemently rejected what she called "sloppy" or "careless" pronunciation because she recognized that their sort of spelling depended on clear pronunciation and enunciation. Parenthetically, it was all the more extraordinary

that she allowed herself to be persuaded into acceptance of the excesses of Webster III and its satellite dictionaries, which I personally am sure would never have happened if Bessie Stillman had been alive, despite the influences which were working on her to be modern and go along with something which seriously undermined the whole concept. The reason for their failure to be more successful in the effort to make this insistence on "standard" pronunciation stick was that they never differentiated adequately between oral speech in informal use and the more formal situation related to written language. People interpreted their stand as relevant to all talking and naturally refused to accept it at all.

One final example of an important phase of the work with specific language disability children, foreshadowed in the 1946 Manual but later omitted, was the Phonics Proficiency Scales. Now they have been revived and expanded to meet the demands of parents and administrators for proof that their children are really making progress, even before this shows on standardized tests.

It can readily be seen that the accumulation of contributions in both the theoretical and practical aspects of the identification and treatment of children with language problems on the part of both of these two workers, through the summarizing years of Anna Gillingham alone, has been of incalculable value. A sentence from the introduction to Monograph III written by Herbert W. Smith, outstanding teacher and educational administrator and long-time friend and supporter of Gillingham and Stillman, and later of Gillingham alone, expresses the thought I would like to leave with you. He said "The association between Samuel Torrey Orton the psychiatrist and neurologist and Anna Gillingham the teacher and psychologist was probably the most productive ever to exist in the interest of children."

3. Memories of Anna Gillingham: A Human Being Like the Rest of Us

Beth H. Slingerland

My assigned topic, "Anna Gillingham's Contribution to Public Education," is difficult or impossible to treat directly. While I knew her—for the last 29 years of her life, beginning in 1935—she had almost no contact with public schools, nor with classroom instruction. She was concerned with children and teachers wherever they were. Her great contribution was of instructional techniques based on the underlying neurological principles she learned from Dr. Orton and basic to teacher training. Her tremendous contributions therein set her apart and above us all. We can do more than carry on what she and Bessie Stillman pioneered for children with specific language disability and, in addition, widen the paths that lead into the future—something that both of them wanted above all else.

This, of course, leads many of us to work in the public schools, spreading her influence indirectly, although it was more often the independent than the public schools which welcomed her and her educational approach at that time.

I prefer to speak of Anna in the everyday kind of relationship I had with her. Sometimes that meant hours together enjoying common interests in either work or play. Sometimes it meant learning to accept with understanding her almost harsh criticism and, eventually to be able to justify to her satisfaction any point of procedure that I used with specific language disability (SLD) children, all of which prepared me for what lay ahead. I am indebted to Anna Gillingham for the reorientation of my life and for the inspiration offered while observing her complete and selfless dedication to the treatment and understanding of dyslexia, the strephsymbolia of her day. To those of us who learned from her she was forceful, demanding, possessive, critical, approving, loyal, and in her own way, affectionate and devoted. With herself she was frugal but to causes in which she believed, she was generous. Aside from the professional ties, we had some mutual interests, one of which released all barriers in bringing us together through love of the outdoors.

Anna Gillingham's most treasured friend was Bessie Stillman. I came to know and love her as a gentle, kindly, quietly firm, considerate lady. She was an artist in her skill in teaching children. What Anna approached with force and insistence, Bessie did with gentleness and persistence. Life for Anna was never the same after Bessie died in 1947. Each one had depended upon the other. Bessie was frail while Anna had unbelievable physical endurance. Bessie contributed more than is generally realized to the teaching procedures that fit into the techniques necessary for helping SLD children to learn.

I met Anna Gillingham and Bessie Stillman for the first time in 1935 in the lobby of Many Glacier Hotel of Glacier National Park in Montana. I recall that I was very curious as to what they would be like and they told me later that they were equally curious about the meeting, wondering whether or not it would be worth their time. Eventually, all of us knew that it had been.

Early in 1935, Mary Winne, elementary principal for the Punahou School in Honolulu, Hawaii—the first American school west of the Rocky Mountains, founded in 1841—wrote a letter to Anna and Bessie to ask them if they would give lessons to her and to a young primary teacher (me) in the summer. Anna's answer stated in no uncertain terms that under no circumstances would they give up their summer in Glacier National Park but, since we were willing to come all the way from Hawaii (by ship only in those days), she would agree to work at their stated times. They would meet with us from nine to twelve o'clock each weekday and no more.

Our introduction to Dr. Orton's work and to SLD children began, as pre-arranged, in early July; but when Anna discovered that Mary Winne, my husband John (who fished each morning), and I planned to walk over the trails in the afternoons, she altered her daily schedule immediately and requested that she be included in those walks. Besides, so she told us, her absence would permit Bessie to rest without interruption. That is how Anna became an all-round real person to us and not just a professional "giant" somewhat frightening and overwhelming. I learned that her bark was much worse than her bite, something that helped to prepare me for all that followed.

During each morning's work we observed that Anna and Bessie deferred to each other with mutual respect for the other's professional strength and knowledge and for their different needs in physical comfort. Bessie sat

in a chair with robes around her legs, a shawl over her shoulders and with what my mother called a "duster" on her head to keep it warm. Anna dressed for the afternoon walk and she needed no robes to keep her warm. Bessie's skirts were full and reached down to her ankles and Anna wore knickers, as did we, and her shoes always were oxfords.

On weekends we took long walks of many miles. On the first hike which was to Iceberg Lake, I prepared a lunch in the usual way, in separate bags for each person to carry in his own knapsack. When Anna learned of our procedure she told me most forcefully that to take food other than an orange, or possibly two oranges, was unnecessary and without justification because eating interfered with hiking. None the less, I prepared the customary lunches, but I put one for Anna in my husband's knapsack. When we reached Iceberg Lake we rested while enjoying its floating icebergs and the magnificence of the surrounding high mountain cliffs. Without any comment we took out our lunches and John handed a bag to Anna. She accepted it readily and she ate everything in the bag. Then, noting that I did not eat all of mine, she told me I was wasteful and that food was meant for eating. She ate what I had not eaten except for the cookies I withheld to feed to the little Columbia ground squirrels and the marmots. Needless to say, the rest of us avoided looking at each other or we would have laughed. She did not discourage us from taking lunches again.

Sometimes in the early evening we took Bessie for short walks over trails close to the hotel. More than once I stood spellbound while waiting for little snakes to reappear after coming out from the side of the path to disappear under her billowing skirts and continue on their way off the trail. She never seemed disturbed, but I was. I wondered if ever she saw them in the first place.

Anna Gillingham and Bessie Stillman were persuaded by Punahou's president, Oscar Shepard, and the Trustees to spend two years (1936–1938) at Punahou, and they gave me full time to work with Anna and Bessie. Anna was a driver, so complete was her dedication and desire to further the kind of instruction for SLD children in which she believed. She frightened teachers and sometimes parents, too, with her blunt and outspoken manner and her almost unmerciful criticism. Bessie helped to smooth misunderstandings whenever she could. More than once I have been grateful for having had the opportunity to know more than one side of Anna's personality and character. In Hawaii, the hiking over Oahu's mountains and

beaches enriched the relationship we shared and that helped me to keep my own sights in focus. Those days provide too many stories to relate for this occasion.

Anna visited us on several occasions after the war, when we had come to live in the country near Seattle, Washington. By this time her home was in a sixth floor apartment in Bronxville and, as she said, most of the outdoor life she could experience was to look down onto the tops of trees. When she was with us she liked to lie in the swing in the late afternoons and look up into the trees while waiting for John to come home and while I got dinner. She had grown fond of John over the years and she looked forward to his homecoming affectionate greeting in the same way she did to his hug and kiss when he left in the morning.

Anna, in the 50's, began to mellow and, sad to say, blindness began to overtake her. She disliked admitting that this handicap was interfering with the freedom of movement she had enjoyed in the past. She spoke with affection of Sally Childs whom she had known as a little girl and then, after a lapse of time, as an adult who was to become her professional heir. By the time I met Sally some years later, she was no stranger to me, so well had I come to know her through Anna.

When we worked together during the day Anna frequently became highly critical of any step I was developing for classroom instruction, tearing it to pieces until I would rise to its defense by vigorously reminding her that everything I was doing was based on what *she* had taught me. Almost without warning, she would go into an abrupt reverse and say, "Well, I just wanted to know if you could explain what you were doing as you will be called upon to do, especially by those who will oppose our work and by those who know nothing about it." Then she would express approval and satisfaction in knowing that I had no intention of deviating from the basic principles underlying her instructional techniques. She did, however, remain irritated and in disagreement with me on one point.

Anna could see no reason why I felt compelled to adjust preventive instruction to the use of manuscript instead of cursive writing. It meant little to her that almost every state in the union used manuscript. "Go in and tell those schools what they should use," she would say to me while refusing to acknowledge how fast I would have been "thrown out" had I behaved as she wanted. It was that kind of attitude that sometimes blocked her acceptance by others. Many times I reminded her that by adapting, adjusting and doing a good job, the results paved the way for the kind of

acceptance and cooperation that led to success. Grudgingly she would agree but she did not like the patience that course required.

Anna was a vegetarian, and she was delighted with the Pacific Gold peach trees we had.

"Take all the peaches you want from the trees," we told her.

"With all those peaches on the ground!! I will do no such thing and you should not be so wasteful yourselves. I shall gather the fallen ones and eat the parts that are not bruised, and so will you, after I peel them," she decreed.

Even though the fallen peaches were welcomed by John's pet geese, she arranged piles of them on outdoor tables and on the lawn. She feasted on peaches off and on throughout each day.

One morning in July I took her to call upon a friend in the north end of Seattle. It was a hot, two hour wait and I became hungry and thirsty by the time she returned. She insisted that we should wait for lunch until we got home. "Lunch here in town, with all those good peaches at home? Wasteful!" So I took her into town to the railway office where she wanted to make return reservations.

As there was no mid-day parking available, I let her out of the car at the office and drove up steep hills to find a parking lot several blocks away. When I returned she was fuming and completely out of patience because, "That railway no longer provides lower berths. I was compelled to reserve a roomette, an extravagence on my part because a lower berth has always been satisfactory to me. They have nothing less than roomettes."

She refused to believe me when I told her how much privacy she would have to spread out the work she liked to do while traveling. (After she got home she wrote from New York to tell me that I had been right. A roomette was better and was worth the added cost to her.) However, that afternoon, I must confess that I cared not whether she walked home or rode on a freight train. Both of us were tired and hungry.

"We will go home now. Where is the car?" she asked.

I had no intention of climbing the uphill blocks to the parking lot, hot as it was, so I suggested that we go to the car by taxi.

"A taxi!! Since when have you not been able to walk? If I can walk so can you!" This time I meant to have my way and, fortunately, a taxi driver had been listening with considerable interest. Our eyes met in a mutual understanding. Without Anna fully realizing what was happening, we literally boosted her into the back seat and the taxi driver quickly closed

the door after me. He drove up all the steepest hills following a round-about way to the parking lot. Then she said,

"Well, that would have been quite a long walk. I guess it was better to ride." I never gave a generous tip with so much pleasure in all my life.

After a twenty-mile drive home, the piles of peaches were as Anna had left them, much to her satisfaction. Without delay she had her outdoor lunch of peaches.

Her determined frugality, exasperating as it sometimes was, was balanced by her honesty in seeing when her judgments needed modifying. Now these incidents are but amusing memories of her forthright individualism.

I saw Anna for the last time in 1962 just a year and a half before she died—a sad time filled with nostalgic memories for both of us. Reluctantly she had gone to live at the Bethel Methodist Home in Ossining, New York. She had become almost entirely blind. I went to visit her early one November morning and stayed late through the next day.

Anna could barely see more than light and dark. Her room was stuffed with what she wanted near her and everything had to be kept exactly in its particular place to enable her to find it by its feel.

She was lonely, longing to see those for whom she cared. She had made almost no friends where she was living because the people there had nothing of interest to offer her and she must have frightened away any overtures of friendliness.

Upon my arrival Anna announced that I was to stay with her all day and until her bedtime at 10 o'clock. By seven in the morning I was to return for our breakfast together.

"We must not lose a minute since you can give me such a short visit. I do not understand why you can't stay longer but I suppose that John does want you to come home," she said. She told me that she was having a great many concerns to bother her and she wanted me to listen to them.

First, she could not decide which of the two *Manuals* to republish—the 1956 or the 1960 edition. When I expressed my preference, *with reason*, of course, she said. "Then you and Sally (Childs) are of the same opinion and, I will regard Sally's preference because she is my professional heir. But I cannot seem to make up my mind." Repeatedly, during the time I was with her, she spoke of her indecision.*

* Her concern was removed when Mr. Robert Hall of Educators Publishing Service published both editions.

As she sat alone in her room each day she must have spent hours recalling her past.

"Beth, I used to tell you and others that it was not necessary to watch one's hands when knitting or typing. Now I have to memorize telephone numbers and sometimes I can't recall them, or I make mistakes when I try to dial. I must wait until someone will read the letters that come to me. Have you ever held a letter in your hand and longed to know what it said? Usually there is no one to write letters for me." Although she did have some help in this respect, there were so many that she had in mind to write that she often felt frustrated.

We went over the keyboard of the typewriter which she had memorized accurately years before. Now, when she tried to type, one slip in hand placement scrambled letter sequencing to a point where what she typed was unreadable. She reluctantly admitted that she could not see when her hand failed to retain correct placement. She was distressed by the loss of this means of communication, but something else bothered her even more.

"You know how I used to tell people there was no excuse for them to look at the keyboard if they memorized its letter placement. I was wrong and now, if you tell me my hand keeps getting out of place you must be right, but I have tried so hard, just as our SLD children do."

In the afternoon I noticed that Anna's eyes and her nodding head indicated some need for a restful doze. I made the mistake of suggesting that she snooze for a little time. She revived immediately, with all her old vehemence to deny any such need, saying. "We have very few hours to be together and I have no intention of wasting a single minute. You stay right here until bedtime." I stayed, never letting on that our conversations were interrupted now and then while she dozed unintentionally.

Next day, Anna said, as she bemoaned the fact that I could not stay longer. "There is one thing I would like for you to do for me. I know it is getting late in the Fall and I wish you would please take me for a walk outdoors. I can't see the leaves but you can tell me what *you* see and I will be able to feel the air and smell the outdoors. We will remember our walks in Hawaii and Montana." So, on that last day with Anna, that is exactly what we did.

We walked arm in arm around a lovely circle of streets upon a hill in Ossining and I described what surrounded us. It was cold but the sun shone and she was aware of its warmth. These last memories are sad and dear to me. It was like reliving the life we had known together, and

I have been grateful that this life included the part of Anna seldom known by many others.

Anna Gillingham gave her all to the cause of specific language disability children with a dedication that excluded almost everything else, including people with different interests. Sally Childs, and other friends came as often as they could but she was often very lonely during those last months of blindness and inability to carry on in her own independent way.

Frequently during my visit she sought reassurances that she would be remembered. "Do you really believe that people will not forget what I have tried to do and that they will carry on without me?"

"Yes," I would tell her, "and like all great people you will become greater every year. Remember how all great people in the world are seldom appreciated until after they go? It will be the same with you and you will keep right on living." She seemed to derive comfort from these reassurances and she would reach out to hold my hand.

It did give her satisfaction that the Anna Gillingham Fund for teacher education would help perpetuate her work. Those of us in the world of education for SLD children can do no less than remind ourselves that what is happening today belongs to Anna Gillingham first, and then to the rest of us. We wish she could have been here today to look out over this large gathering to see for herself that she has become a giant above all others and that she is not forgotten. She *is* remembered, as she would like to be.

The Self-Concept and the Cycle of Growth

Margaret Byrd Rawson

Language Consultant; Editor, *Bulletin of The Orton Society*

This paper was presented at 24th Annual Conference of the Orton Society, Baltimore, Maryland, 1973

Since the statement was formulated three or four years ago, it has almost become a cliché to say, "let us teach the language as it is to the child as he is." Actually, this is not such a bad thing to have happen—in fact, it is just what we wanted, for we were giving shape to a principle and are glad that the shape caught on. "*Teach*"—we've been concentrating on this from the early days of the collaboration of Dr. Samuel T. Orton, the physician, Anna Gillingham, the psychologist, and Bessie Stillman, the teacher; "*. . . the language as it is. . .*" is another old concept, but with much new data and understanding added from the discipline of linguistics; "*. . . to the child as he is,*" this, also, has been based soundly in the disciplines that describe the neurophysiological and psychological structure and functioning of the human being, with a whole host of new information and some very exciting breakthroughs in learning theory and in brain science. We have learned in these various disciplines, too, to individualize children's capacities and needs better and better, and so maybe we are doing a better job of tailor-made education—live, exciting education—as well as training and skill development. We are indebted to the Libermans, the Geschwinds, the Piagets, the Slingerlands and the Childs, and all the rest, and there are new and bright ideas coming up in lots of places, aspects of life that we haven't hitherto given enough or sufficiently consistent attention to. There is plenty of ferment around!

You may have noticed that I haven't mentioned several important areas. For instance, I haven't said anything about socio-cultural conditions, or social problems, or dialects, or chemotherapy, and so forth—not because I don't think they are important, but because, as my country neighbor put it one day, "One man can't only do but just so much." Conference programs and the literature are full of discussion of these other topics of concern.

But there is one area which, I think, hasn't had enough attention at our hands, probably because we were either taking it for granted or over-

reacting to the apparently undue emphasis put upon it by many of our fellow laborers in the vineyard, or for both reasons. I am, of course, thinking of the role of the emotions in the language and language fields. I don't suppose we could find one among our diagnosticians or therapists who would gainsay the importance of emotional factors, but we do sometimes downplay them. We think we see many, many times when a child is really emotionally hung up *because* he hasn't been able to function well in the communication endeavor as a pre-schooler or in the school years, rather than the chicken-egg sequence being the other way around, as our psychiatric, social work, and school guidance friends would often have it. And we cite as quite convincing evidence cases, known as individuals or in such studies as the Klines', where beginning with language therapy—rather than psychotherapy—either erased the emotional problem or reduced its anxieties to manageable proportions. Of course there are emotional situations concurrent with, but more or less independent of, school learning which sometimes have to have attention on their own. Always when emotions are involved they are likely to tangle up the situation and make it more difficult to handle; but we try, often deliberately though sometimes just on a kind of unstated, or sixth sense basis, to encourage people to become therapists because they have natural or cultivated personalities and skills which are therapeutic. The therapeutic climate is as much a part of the total educational treatment as are the more language-specific theoretical understandings and the instructional skills.

And yet, there is an area of professional discipline, knowledge, understanding, and skill here that we should be making deliberate use of. We do not rely on a teacher's "feel" for the structure of English, although we are glad if she has high aptitude there, and we should not be so naive as people sometimes are when they think of psychotherapy or social work as "just common sense, you know, dressed up with some current jargon." Nor should we shrink away from the helping professions because they have a vocabulary different from our own. There is something there that we need, and we'd do well to bring our development in it up to date.

We have heard, and said it ourselves many a time, that one of the most vulnerable spots, and one of the most important ones, in our children and young people is their *self-concept*. How do they feel about themselves and the fact, of which they are only too aware, of their failure to measure up to their own and other people's expectancies in learning to handle language—speech, reading, writing, spelling, self-expression, and the like?

What has been the history of their development in this respect? Is there anything we can learn about the general history of human psychosocial development which will throw light on the difficulties which seem particularly marked, and full of variations, among the ones I call "our" children? And, perhaps, can our experience with the interactions between language learning difficulties of the kind we call dyslexia, and the feelings of our children about themselves and their interpersonal relations, tell our friends in the "helping professions" anything that may be useful to them? Let us see what the formulations of some people in psychiatry can contribute.

Do our children go through the stages of development outlined by Freud and his professional descendants? The labels, "oral," "anal," "Oedipal," "latency," etc., and the terms "id," "ego," "super-ego," "libidinal," and the like no longer fill us with fear and loathing as they did many people in my youth, though we may prefer to use other names for similar concepts.

Then there is Adler's "inferiority complex," and his theory that one often finds his greatest interest and, later, expertise, as a compensatory excellence in a field where he had to overcome weakness. There is Dan, of my Rose Valley study, who has become an excellent public speaker and brief-writer in the legal world, by his own deliberate effort, and Derek who followed his interest into a major in American Literature and is teaching English in prep school—both despite severe and undoubted dyslexia in childhood.

Familiarity with the formulations of Jung—his personality types, and other concepts—has helped us to meet some very different individuals where they are, and to go on from there with them. Though it may be a frivolous sample, the persistence with which children throw themselves back 500 years with insistence on the long-a pronunciation of *ea*, in spite of our precautionary measures, almost convinces us that racial memory does not deal only with long-buried myths.

From another line of descent—William James to William Glasser, with his "reality therapy," which, despite his protestations, finds some sanction among the analysts—comes reinforcement for our here-and-now emphasis.

Of all the writers in the psychiatric-psychology field, though, I believe I have had most help in thinking and practice with students of all ages from Erik Erikson, a neo-Freudian, and his psychosocial development schema. Whereas Shakespeare's somewhat cynical non-hero, Jaques, in *As You Like It*, outlines a famous but hardly satisfactory seven ages of man, Erikson does much better by childhood and by the continuity of life through *eight*

psychosocial stages. These ring more true to fact and add to both our general insight into human life and our understanding of the young people we are trying to help. As any good diagnostic study should, this formulation gives suggestions, or prompts creative thinking, about how a non-psychiatrist—a plain teacher or other friend, and especially a tutor or language therapist—can utilize the schema to help, without ever presuming to go outside the helper's own defined role. An outline of Erikson's contribution to our understanding is, I think, in order.

According to Erikson, on the basis of what we know of human development there appears to be a kind of developmental ground-plan, called by scientists an *epigenesis*, for the psychosocial, as well as for the physical, growth of each individual. At each age-period there is a normally appropriate growth problem, which Erikson calls a psychosocial crisis, using crisis not in the sense of impending disaster but of a crucial issue which needs to be settled or established before the individual can satisfactorily go on to the next period. If it *is* properly passed or resolved, then he is free for the next stage of growth. On this basis, Erikson divides the Ages of Man into eight, quite unequal in duration, but, he feels, equivalent in importance.

First, in infancy, roughly the child's first year, before he is able to walk or talk, is the period of complete dependency, when his elders must take care of him. If he is to grow properly, they must give this care in such a way that he feels *trust* in his environment. He is safe, warm, nourished, comfortable, and especially, loved, and he can count on this. The ways in which various societies implement this caring and trustworthiness are different, but if their children are to flourish, it must be provided. The personal aspect of the nurture is most important, as we have had pointed out in the experiments and experiences in institutionalized care of infants with the use of mother-substitutes who made the difference between growth and stultification in babies who were physically adequately provided for. The Czech film, "Children Without Love," which some of us saw when Dr. Zdĕnek Matĕjček lectured in the U.S.A. in 1968, is a beautiful and moving documentation of this idea. So is "Roots of Happiness," the film about life in Puerto Rico, and the one about family life in Gainesville, Georgia, of some years ago. We can all, doubtless, think of other instances. It is the spirit, not the standard of living which matters.

If this first stage is normally gone through, the child goes on with a sense that things are going to work out, that he has justification for optimism and basic, persistent, life-long hope, that he can generally expect people

72

and events to be not necessarily easy but possible for him to cope with and he, in turn, can *give* to others. In Erikson's words he feels "I am what I have and give."

If this stage is not properly consumated, the result can be *mis*trust, a constant need for reassurance, insecurity in personal relationships, and a general pessimism about life and the world. Even very poor physical surroundings and hardship, however, need not have this result, as long as the little child feels that there is someone, usually his mother, who really cares for him and whom he can depend on to have his interests at heart. Nor is it, necessarily, too late to make up this stage in the eras after its appropriate time has passed. In Axline's powerfully insightful "Dibs, In Search of Self" we see the retrieval of the trusting attitude taking place between an initially apparently psychotic child and his psychotherapist. On a less deep level, *we* have an opportunity to provide something of the missing sense of trust with some of our children when we really do care about them individually and let them know it in all our actions toward them—our reliability in meeting them as planned, our support of them, even when we have to be firm, and our genuine caring about their progress toward the overt therapeutic goal of language learning competence. We cannot—must not—attempt to be either psychotherapist (in the deep sense) or parent, although we partake of some of the characteristics of each, but we can help the child or young person to experience *now* what he missed, in whole or in part, in infancy—a sense of basic trust in someone with whom he is involved in a positive relationship.

Erikson's *second* stage, what has elsewhere been called the "runabout period," covers roughly the next year or so of the child's development up to about age three. He learns not only to walk, but to move about with skill and assurance, to become, in Erikson's term, *autonomous*, able to separate himself from others in a way he knows he can manage, to begin to be a self in his own right—"to be his own man." There is a parallel here in learning to talk when, as Vygotsky puts it, "thought becomes verbal," "speech becomes rational" and the child is launched as a human language user. Normally he can do this, and is permitted and encouraged to do it within the limits of his developing capacities. He has not as yet developed mature discrimination in matters of "holding on" and "letting go," of doing what he wills to do in the short run, and of willing to do what the facts of life make it necessary or desirable to do in his own long-term interests. So he must still have the support of adult protection and firmness to help

him know that it is all right for him to go ahead, and that he is not at the mercy of either external forces or his own as yet possibly unmanageable impulses, of which he may be justifiably frightened.

I am reminded here of a very overactive and uninhibited somewhat older Johnny I once taught. His father had withdrawn from the battle, and his mother was unable to cope with him, so he generally did as he pleased, often with disastrous results. He felt me as unduly restrictive, at first, when I insisted on going on with the lesson instead of letting him "tell stories." One day I gave him free rein. As he told a rambling tale, full of murder and mayhem, he became more and more frenzied until, in a few minutes, he was almost literally "beside himself," writhing on the floor. I picked him up, held him firmly but lovingly, stood him between my knees facing outward, with my arms tightly around him. He gradually subsided, as a sobbing child will do. and I said, "Was it a good idea, Johnny, that story?" With real relief he almost whispered, "No. It wasn't." Several times, after that, I held him, more or less firmly, as we worked. He never seemed to resent it, but rather to welcome help in controlling frightening inner forces, and he did work at the presented tasks, and he did learn to read. I do not know how deep this went, for I have lost touch with him. It was probably not enough, but it was not destructive, and I think it was within the limits of my "job description," what I could do as a protective nurturing adult to be helpful to him in developing a controlled will.

If the child goes through this stage normally, working out his capacity to be independent, he develops "a sense of self-control without loss of self-esteem" and if your philosophy permits it, free will. At least he has the feeling of some freedom of will to say "yes" or "no" and to make choices as to his own behavior. If he does not get through the period satisfactorily, he may emerge into the later years of childhood, and the rest of his life, full of doubt of himself and of the wisdom of his elders. Here the factors of impulsiveness and, especially, compulsiveness come into play. Not bad in themselves but good, in reasonable degrees, they may become the masters rather than the servants of the individual's life, and in the end he may become an overly rigid, intolerant character, or a slippery "character disorder" individual, or both, by turns, in a baffling sort of life-style, always apologetic and ashamed of himself, perhaps overcompensating for this by bizarre brashness and "acting out." He cannot stand securely on his own feet and go with assurance where he needs and wants to go. He cannot say, as he should be able to, "I am what I can will freely."

When a child comes to us with some difficulties left over from unsatisfactory resolution of this period, we can be especially helpful in seeing how very much he needs what we aim to help all our children get—the ability to feel free to do what is needed, to know that he can learn what he needs to know, and that the therapist will stand by to help him to do it for himself, not holding onto him in any part of the experience longer than *his* needs (not hers) dictate.

The *third* period of life, which we think of ordinarily as the preschool years, Erikson designates as the time for the emergence of *initiative*, as the positive outcome of play and imaginative activity, in which the child, now moving freely (and we add, communicating effectively in speech) is able to project himself into various roles. Saying, "I am what I can imagine I will be," he can play at being a daddy (or she a mommy) at being "doctor, lawyer, merchant, chief" . . . particularly chief, or cowboy or cop. He can play *with*, not just alongside his age-mates, and follow the lead of older child-heroes. He may adore his older brother, who may not reciprocate, just as he, himself, may be resenting his younger siblings. The ideals of parents, whom children at this age hope they may someday be able to be like, are incorporated as conscience and, in Freudian terms, the super-ego and the ego-ideal. Work (which looks to the adult to be play) and games (though not yet formalized), form the beginnings of the drives to aggressive pursuit of goals.

If things go wrong here, or fail to go right, the child may become inhibited, unable to act on his own, full of guilt feelings for having desired to rival father or mother and cut him or her out, in favor of self. He may become so passively compliant as to seem an "empty" personality. Or the child may overcompensate for his sense of guilt by a vast show of activity, strutting, "bathroom talk," and the other, to adults obnoxious, characteristics of the "furious fives." It is not just "I'm the king of the castle" then, but especially, "you're the dirty rascal!" And just how dirty a visit to the kindergarten or the equivalent of its locker-room will tell our shocked adult sensibilities some things we've forgotten, or, if we are sheltered women, perhaps some things we never knew. To make sure of his kingly status (of which he is in such guilty doubt) the youngster may not only call names, but also throw "sticks and stones" and physically bully anyone he can, not so much to hurt the other guy (though there is some satisfaction in that), as to show how high he can climb on the corpses of his, often trumped up, enemies. Sometimes, says Erikson, the effects of inadequate

surmounting of this crucial episode in the growth cycle may not be apparent until later, but the alert adult can recognize it by its outcomes in social behavior, though the diagnosis from the symptoms is by no means sure-fire.

When a child comes to us in school, or later, with this unsolved difficulty in his background, what can we do? It is rarely possible to get anywhere by just telling him about it in rational or moralistic terms. Certain reality factors, such as, "Do you think that's going to make the other kids like you, or want you around?" or something of the sort, may have some value. Better still, from our position in his life, perhaps he can recognize in us, on a level deeper than words, something he'd like to be like. If so, we can set him free, and encourage him to act positively and effectively, with initiative, in pursuit of his own goals, within the limits of social acceptability and the developing conscience. He can come to do what *he* wants to do, not simply depend on or accede to our specifications, as in, "How many pages do you want me to write?" Then, under circumstances more favorable than before, we shall be making use of his re-living of this era, to set the stage for his effectiveness as a school child and, later, in both technological and social achievement.

In language, specifically, if between three and six he learns that he can get himself across, can talk about present and future so that other people really understand his verbal formulations and expression, certain large paving stones are thereby laid for future success in the verbal disciplines. If he is older, he may well have to recapitulate this stage at the same time he is working on the others, and if we recognize his needs in this respect we are better able to weave these strands into both formal instruction and bibliotherapy. Who knows how much of the popularity of the "Little House" series of Laura Ingalls Wilder lies in the readers' needs for just such people as Pa and Ma, and for the example of their children's living with them? One does not "point the moral," though it is often wise to talk about the things and people and the events of their lives wherein the "moral" lies buried. Children's living of these experiences vicariously and with delight, should, it should go without saying, take the place of any satisfaction the adult might get from showing that he or she knows what should be said in a sermon.

Perhaps this is the place to interject a word of caution, which I remember needing when I was first learning about when to give and when not to give insight in verbal terms. Often, perhaps always, undesirable behavior toward oneself or others is a defense against the laying bare of a very

tender vulnerability. The individual *needs* these defenses; they are his "Linus blanket" against "the slings and arrows of [what seems to him] outrageous fortune." If he is to be rid of the defenses and the rest of the world is to live tolerably with him, two things are needed. He must, perhaps with our help, grow beyond his need for them before he can let the defenses go, or we can sometimes suggest, privately, of course, that he doesn't need to do *that* anymore. For his own protection and that of the rest of the world, he has to understand that, no matter how much we value him as a person (and that's a lot), "his right to strike ends where his neighbor's nose begins"—whether the "nose" be taken literally or whether it means the whole person, including the feelings, the "face," of the other person, adult or child. He can know that between him and ourselves, in the therapeutic teaching relationship, certain expressions of feeling, in words or clay-punching, can be accepted and understood for what they are. If we have our own role and responsibility clearly in mind we can do this, like all our therapy, without becoming (Heaven forbid) "amateur psychiatrists." As in defining a word, we can know better what something *is* by also knowing as much as we can about the things it *is not*. Hence this present excursion into the psychiatric realm.

And now, at long last, we come to the really "crucial crux" or crisis of development from the point of view of the teacher of most language learning difficulty children. This is Erikson's *Stage 4*, where the desideratum is what he calls "industry" or "skill" but sometimes designates, as I prefer to, the establishment of a justified sense of *competence* in the real work of childhood in any culture, the learning of the technological and cognitive skills which are everywhere taught in what we call the grade-school years. This is Freud's "latency period," before the beginning of the storm and stress of adolescence. In literate cultures, this means the period of learning literacy and its concomitants. It is here, particularly, that we are likely to meet the child we often call dyslexic—the one who says "I can think, but what's wrong with me is my words [including sometimes numbers]. I forget them . . . I can't manage them." If the educational institutions his society has set up have not been able to teach him the competencies necessary to a justified *sense* of competence, he may, or should, be on our doorsteps. If we think about this difficulty as primarily rooted in his feelings about himself (which are extremely potent) and deal with them only, or almost exclusively, the best we can hope for is an unrealistic (in our world) or resigned (and so more deeply buried and unhappy) acceptance of his lot.

He knows himself as less than fully capable, one to whom many options are closed, and for whom there must be constant and difficult circumlocutions in dealing with a world where signposts are often of critical importance and full citizenship requires use of the printed word as well as of its technological substitutes. No matter how completely *we* accept *him, he* cannot accept *himself* as a fully worthwhile, competent, effective person unless and until he gets at least functional mastery over the verbal and mathematical skills which will permit him to do what he wants to do. His objectives may be simple or highly complex, from riding the bus to work and reading the plant bulletin board for himself to practicing law, medicine, literary research, or teaching, as many dyslexics have succeeded in doing. There is *no substitute* for genuine competence and he needs the help which makes it possible for him to develop it. This competence is the only solution, real solution, to the sense of inferiority, and all that it leads to in personal and social waste, unhappiness, and often tragedy. If he lives the life of "Garam, the Hunter," and, later "Garam, the Chief," in a non-literate African culture, it is the skills of that culture that he must learn; but in modern literate, technological cultures such as our own, somewhere he must get the skills of school. It is in this fourth Eriksonian stage that we have particular responsibility and opportunity. "I am," the child needs to be able to say, "what I can make work."

"The search for identity" is the focus of Erikson's *fifth stage*, and the one on which he has spent the most thought and energy in formulation, diagnosis and treatment in his distinguished career as the psychiatrist whom legions of young people would call blessed, if that were the idiom of the times. He spells out for this period what the establishment of one's identity means, how it comes about through the eventful, and often stormy, years of adolescence, and what are the personal and social consequences of a successful quest and of an unsuccessful one, in all their many varieties. With all the volumes and papers on the subject surrounding us, it is not necessary to go into description of the phenomena of adolescence, a period in its own right and a preparation for full adulthood. The significance of Erikson's discussion, I think, lies particularly in his pointing up the appearance, for positive or negative value, of the results of the successful, unsuccessful, or partially successful passage of the individual through the earlier stages of psychosocial growth, and the foreshadowing in each of them of the likelihood of events and tendencies in the three adult stages to come. How can one achieve a satisfactory and satisfying identity as a worthwhile, whole and

happy person unless he feels justifiably competent in meeting the demands the world seems sure to lay upon him, and unless he can go forward with faith and hope, confidence and initiative, built up in early childhood?

If he comes to us as an adolescent, it is doubly challenging, for he not only has more to learn than does the younger pupil if he is to catch up, but we may have also more of what he calls "hang-ups" to help him deal with. We can do this with him, given adequate time and expertise, but we can do it best and most expeditiously if we know not only his cognitive and skill needs, but his psychosocial ones. Without going into emotional diagnoses, we need always to behave in such a way as to make it possible for him to trust us; to feel that we are ready and eager to give him freedom to take responsibility for himself all along the line, but ready, too, to help him to take that responsibility; that we want him to exercise and enjoy initiative in handling his difficulties, be they of any sort among the myriad demands life makes; and particularly that our special expertise is at his service in the establishing of genuine, long-lasting, reliable competence in handling the world's demands, especially the academic ones *because* they are a key to his establishment of himself and his mastery and enjoyment of his world.

In the *sixth stage*, which marks the transition from adolescence to full adulthood, the young person establishes his capacity for intimacy, especially with a partner of the opposite sex. He is not now "playing the field," but if he is secure in this stage of his development he can get on easily and securely with persons of both sexes because he is freed of the ambiguities and uncertainties which he has now grown through and out of. "Now," for instance, says the hitherto socially shy and awkward girl, "now that I am engaged to Pete, whom I truly love, I find it so much easier to get along with other fellows as if they were just *people*, not boys I have to worry about as boys. I think I even get along better with my girl friends, too, and with all the other people I know and just meet. It has cleared up life, all around!" Perhaps, as is the case with one such girl of my acquaintance, this development followed a long period of dyslexia, recognized and treated only in college years, and then successful professional education and job experience. She looked very different at this point from the freshman I knew first. I was, I may say, influenced in my part in her education, and re-education, by Erikson as well as Orton, Gillingham and the General Semanticist, Wendell Johnson.

The next, *seventh*, stage of adulthood—the years of maturity—is charac-

terized by Erikson as the period of "generativity." This includes the bearing and rearing of children, best accomplished if the first six stages have been met and lived through to successful outcomes. But this is by no means all of the concept of "generativity," for it includes successful professional performance and growth, both as a learner, an executive and a teacher of one's juniors; as a "helping person" in one of the helping professions, such as teaching or social work, psychology, medicine or nursing, or hairdressing, or domestic service. A prime example, of course, is homemaking and motherhood as a profession. The generation of things and ideas are part of it, too, and all the aspects of what Erikson calls "care for one's products." One need not be married nor the biological parent of children to deal most creatively with the period of "generativity"—and the avoidance of "stagnation," which Erikson designates as its opposite and of which any of us can all too easily supply examples.

Here, too, the influence of all the preceding periods is felt, often in most complicated and distress-producing ways. There comes to mind as one of many examples the charming, chic, socially adept mother of one of our pupils. Her husband was a man of professional competence and in a position of considerable responsibility and authority, especially in the lives of young men in government service. He was an understanding father, and was especially helpful with one of our teenagers who was in deep trouble. He was, as far as we could tell, also a most loving and supportive husband. But his wife could not read *at all*, and he was unable to convince her that she could confide this in one of us and perhaps get some help for the problem with which her son was learning to cope through his language therapist's teaching. She found it necessary to engage in all manner of subterfuges, which she did with great skill, in order to hide from the world a situation which she could not but feel as a deep disgrace and source of shame. As an adult, it was her right to choose this path, and not ours to violate her husband's confidence by approaching her on the subject, but she stays in our memory as a concern about how much her path was costing her in effort and fear and anxiety.

There is one more stage, which more and more of us are experiencing as life-expectancy grows; that of the latter end of life, "for which the first was made"—if we are lucky. In the folklore of geriatrics there is the statement that whatever a person is, up to old age, he or she will be even more that way as an oldster. Erikson's contrast here is between "integrity" and "despair"—as seen in the "wise elder" (whom we'd all like to be if we can

make it), still active and full of life and verve to his dying day, and on the other hand, the park-bench-warmer, who with nothing to do is doing it discontentedly, if not bitterly. I think of an octogenerian of my acquaintance who worked certain repetitive kinds of puzzles because, he said, "It helps to pass the time." In contrast was the great lady of 94, a polio heroine from childhood (heroine because, very largely, of her mother's wise management). She was unmarried, beloved by many nieces and nephews of three generations, many children whom she had expertly and lovingly taught, friends and relatives of her own and younger generations. Despite her inadequate left hand, she played the piano, in her last years from her wheelchair, and she followed the baseball world enthusiastically on radio and television. Her last words, from inside the oxygen tent, were, "How's the ball game going?"

"How's the ball game going?" Erik Erikson? With your help, perhaps we can help it go better for our students, patients, clients and children, especially if we give thought to our very primary responsibility for making it go well for ourselves, as those who, to the best of our ability, are givers (phase one); the masters, as far as it is given to man, of our own souls and behaviors; actively taking initiative; continually increasing our own competence in our affairs and so our sense of self worth; trusting our own continuously growing feeling of identity; warm, understanding and at ease in our relations with others; giving to the world what has been given to us and as much as we can manage; and approaching the end of our years with a sense of integrity and the hope and faith in life with which, if we were fortunate, we began. Thus we may bring the life cycle fully around the circle, with a satisfying self-concept supporting us all the way, from infancy to all we can know of immortality.

References

Adler, A. 1951. *The Practice and Theory of Individual Psychology*. Humanities Press.
Axline, V. M. 1965. *Dibs: In Search of Self*. Houghton Mifflin; Ballantine.
Berry, E. c. 1935. *Garam the Hunter; Garam the Chief*.
Childs, S. B. and Childs, R. de S. 1973. *The Childs Spelling System: The Rules*. Educators Publishing Service.
Erikson, E. H. 1961. Roots of virtue. In Huxley, Julian, ed., *The Humanist Frame*. Harper and Bros.
Erikson, E. H. 1964. *Insight and Responsibility*. W. W. Norton.
Erikson, E. H. 1968. *Identity: Youth and Crisis*. W. W. Norton.
Freud, S. 1949. *An Outline of Psychoanalysis*. W. W. Norton.

Geschwind, N. 1972. Anatomical evolution and the human brain. *Bull. of the Orton Society* XXIII:7–13.

Gillingham, A. and Stillman, B. W. 1956. *Remedial Training for Children with Specific Disability in Reading, Spelling and Penmanship*. Educators Publishing Service.

Glasser, William. 1965. *Reality Therapy*. Harper and Row.

Goddard, H. C. 1951. *The Meaning of Shakespeare*. University of Chicago Press.

James, William. 1962. *Psychology: Briefer Course*. Macmillian, P.B.

Johnson, W. 1946 *People in Quandaries*. Harper and Row.

Jung, C. G. 1939. *The Integration of the Personality*. Farrar and Rinehart.

Kline, C. L. et al. 1968. The treatment of dyslexia in a community center. *J. of Learning Disabilities* 1:8, 456–466.

Lecky, P. 1946. *Self-Consistency*. Island Press.

Liberman, A. N., Cooper, F. S., Shankweiler, D. P., and Studdert-Kennedy, M. 1967. Perception of the speech code. *Psychol. Review* 74, 6:431–461.

Liberman, I. Y. 1971. Speech and the lateralization of language. *Bull. of the Orton Society* XXI:71–87.

Orton, S. T. 1925. Word-blindness in school children. *Archs. of Neurology and Psychiatry* 14:581–615.

Orton, S. T. 1937. *Reading, Writing and Speech Problems in Children*. W. W. Norton.

Piaget, J. 1952. *Language and Thought of a Child*. Humanities Press.

Rawson, M. B. 1968. *Developmental Language Disability: Adult Accomplishments of Dyslexic Boys*. The Johns Hopkins Press.

Rawson, M. B. 1972. Language learning differences in plain English. *Academic Therapy* 7:4, 411–419.

Slingerland, B. H. 1971. *A Multisensory Approach to Language Arts for Specific Language Disability Children*. Educators Publishing Service.

Vygotsky, L. S. 1965. *Thought and Language*. M. I. T. Press.

Wilder, L. I. 1933–1962. *The Little House in the Big Woods*, and others of the series. Harper and Row.

Wise, J. W. 1966. Erikson, ego-identity and the dyslexic school child. *Bull. of the Orton Society* XVI: 74–78.

Advances in English Spelling

Sally B. Childs

Language Consultant
Clinton, Connecticut

The following article is based on a paper presented at the 24th Annual Conference of the Orton Society, in Baltimore, 1973.

The topic "Advances in the Understanding of English Spelling" provides a provocative ambiguity. On the one hand it suggests the presentation of a summary of recent improvements in spelling instruction; on the other it could suggest the realization that the usual teaching of spelling is totally inadequate for the demands of modern communication.

Like reading, spelling is a means to an end; it provides the means of demonstrating learning, or sharing information and creative accomplishment with a larger audience than that reached by oral transmission. Equally important advantages are that the "message" may then be *read* rather than *heard*, greatly reducing the necessary amount of time for reception; the message will not be jeopardized by poor memory and oral transmission; the message is less subject to intentional alteration. The advantages of written over oral communication exist as much today as when writing was invented 5000 years ago, despite technological advances in both areas. However, in contrast to reading (the correct interpretation of correctly printed symbols), spelling (the transcription of sounds into correctly written symbols) is much more difficult. This basic difficulty is greatly complicated by additional demands of modern life; the greater quantity of written material demanded; the greater complexity of the content of the material; the more serious consequences of failure of communication, like the famous mistranslation of the word "ultimatum" in World War II contributing to the decision to use the atomic bomb.

Evidence of inadequacy in the attainment of language skills deluges us on all sides: 1.5 million Americans cannot read at all (1970 Census); 8 million school children need academic help; 5 million job seekers are functionally illiterate; the average prison inmate has had 9 years of schooling

but reads at the 4th grade level. Comparable figures about spelling do not exist, but an assumption that they would be worse seems justified by the 20 million Americans over age 16 who are unable to complete standard application forms for drivers' licenses, bank loans, or Medicaid. A further indication is the resumption of a test of writing by the College Entrance Board in addition to the usual verbal and quantitative sections. It seems clear that spelling instruction fails to produce results and that even more time allocated to it does not solve the problem. It also seems clear that methods dependent largely on rote memorization in conjunction with semantic clues are theoretically as well as practically inadequate. It is further clear that the introduction of "phonics" in its usual form will not solve the spelling problem.

It is important to distinguish carefully between: (1) an approach to spelling which is still centrally geared to memorization plus semantic clues and with an elementary introduction to sound-letter connections, and (2) a centrally "phonic" or encoding approach. The procedure in (1) is to present words, pronounce them through the use of picture and semantic clues, and establish some sort of connection between sound and letter. There is usually little or no drill or adequate practice to make a durable connection between oral & printed words, and no attempt to unravel the mysteries of multiple or alternative sound-letter connections. In a centrally "phonic" or encoding approach, the basic sound-letter connections, one symbol to represent each sound, are taught first and mastered so that the student can spell any pronunceable combination of sounds, irrespective of meaning. After this procedure is completely reliable, the "probabilities" of English spelling variations are presented and mastered so that scientific choices can be made when needed. When this succession is conscientiously adopted and implemented, English spelling becomes about 90 percent predictable, leaving only 10 percent to be learned as individual words that require special study. The common cliché, "English spelling is so irregular," reveals only the ignorance of the speaker. For example, although sixteen spellings of the sound /ā/ occur in English, only four occur in many words, and of these, three are predictable, covering 90 percent. Use of the encoding approach to spelling instruction over the last 25 years has resulted in improved performance in spelling tests; in a technique for coping with more complex needs in the future; in greatly improved spelling in practical use, and in pride in correct spelling based on the joy of learning and accomplishment.

In attempting to solve a difficult problem it is necessary to define the problem, to analyze the pertinent factors, to identify the available tools and to formulate a plan for their use in a suggested pattern. In considering the optimal way of teaching English spelling we have defined the problem. The pertinent factor is the classification of English as an alphabetic-phonetic language, somewhat eroded by the inability of its written form to keep up with its changing oral form of a live and dynamic language. For English, the problem is further compounded by the large infiltration of words from many languages having different patterns of sound-symbol correspondence. Other languages have tried to retain their original purity, for example, the French and their Academy; but this has proven to be a losing battle. However, the problem of foreign words can be solved using a coding approach. A final factor, often insufficiently recognized, is that despite protests to the contrary, education of the "poor" has lagged so far behind general education that as recently as the mid 19th century it was immoral and often illegal to teach the poor to read, lest they become discontented. Spelling was considered even more subversive. America was less backward in this respect than England because the policy was never official here, even though the results were similar. The demand for adequate minimum levels of acceptable accomplishment presents a pressing factor.

The tools available in solving the spelling problem are simple since they consist of the 26 letters of the alphabet and the 44 readily identifiable sounds of English. Phoneticians can distinguish more sounds by introducing fine differences inaudible to ordinary people. It is necessary to be able to make the 44 sounds in isolation as "pure" sounds, each consisting of only the one sound. It is necessary to learn to recognize, name and write the 26 letters (preferably using cursive for writing). The process of connecting the sounds and letters is best accomplished by beginning with spelling the most simple and dependable pattern of sounds, vowel-consonant or consonant-vowel-consonant, e.g., *at* then *fat*; later, inclusion of consonant diagraphs and blends; then vowel-consonant-final-*e*; multisyllabic words and long and short vowel patterns; vowel digraphs and diphthongs; etc. Nonsense words are used to insure a genuine skill in spelling any pronounceable combination of sounds. Any new situation is introduced first in general, followed later by the variations. When a logical connection exists between a new item and something already known, the discovery technique should always be used.

Theory in Practice—Basic Level

The application of any theory can usually be carried out in different ways, even though the starting point and the end product are the same. It is only by planning a series of procedures, trying them out, improving them, and evaluating the results, preferably over a number of years, that valid judgments can be made as to the effectiveness of the procedures. It is also recognized that the measures used in evaluating competence are crucial to the result. The object of adopting a phonic or coding method of teaching spelling is to develop a generalized spelling skill, useful not only during formal education but both permanent and capable of growth as needed in adult life. In contrast, traditional methods attempt to teach the spelling of a selected vocabulary by means of rote memory aided by semantic clues, an approach which provides no adequate means of coping with forgetting except by recourse to the authority of an adult or a dictionary. Evaluating the success of the coding method involves checking on the mastery of successive steps in spelling complexity, as for example the "Childs Phonics Proficiency Scales." [1] Evaluation of the success of the traditional method consists of demanding the spelling of selected words from the selected vocabulary usually accompanied by repetition and context clues, or more recently of a proof-reading test in which students are required to identify and correct mispelled words on lists presented to them. It is generally accepted in the world of psychology that matching or recognition is much easier than recall and reproduction, but for written production it is the latter which are needed. It is accepted in this presentation that traditional spelling tests measure traditional spelling instruction only and do not measure general spelling skill.

In teaching spelling as encoding it is necessary to have teachers well-trained in the steps of this method, adequate time, and groups of manageable size, whether in the classroom or in language training groups. In the ideal situation spelling is part of Language Training, but it can be taught as a special subject. The method to be outlined is an adaptation of the original Gillingham-Stillman procedures first developed for classroom use and published by me in 1949 for use at the Sidwell Friends School in Washington, D. C. Miss Gillingham requested me to do this to supplement a remedial program she had already established at the school. She knew of my initial

[1] Published by Educators Publishing Service, 75 Moulton St., Cambridge, Mass. 02138. Childs Phonics Proficiency Scales Series I and II.

attempts to develop a structured spelling rationale, beginning in 1942, and the concept of the ABC System. This structure has been modified and developed since 1949 on the basis of its use in many schools all over the country, but always in harmony with the basic principles set forth in the Gillingham and Stillman Manual.

The starting point of the Childs Spelling System is the recognition that despite its superficial appearance of irregularity, English spelling does follow inherent patterns which make it 90 percent predictable. Therefore, it is possible to divide all words into the following three groups according to pattern which permits studying words in groups instead of learning each word individually.

A. All words completely regular in sound-letter correspondence.
B. All words completely predictable in spelling by applying scientific probability through rules and choices between multiple spellings.
C. All words containing one or more unusual instances of sound-letter connection for which individual learning must be adopted.

The A-words are classified on the basis of the single, first basic spelling for the basic sounds; a few sounds are postponed to avoid confusion. The B-words are classified on the basis of the following extensions of the one sound-one symbol connection: 1) the inclusion of additional sounds; 2) the addition of choices between possible spellings dependent on position of sound in word or adjoining letters; 3) the application of rules for the addition of affixes and situations in which sound alone cannot determine a choice. The C-words depart from the emphasis on the efficiency of covering groups of words whenever possible and include words so peculiar that they must be learned individually or in small restricted groups.

In addition to beginning to master the tools of sounds and letters, it is very important to spend time improving the oral language of the students. Many of them not only need to learn how to analyze a word into its sounds and blend a series of sounds into a word, they also need to separate the sounds of a sentence into words and clarify their pronunciation so as to connect it with "standard" pronunciation. We do not aim ever to remake the informal speech of our students. We do recognize the fact that if they are to use their speech as a basis for spelling it must bear some resemblance to "standard" or General American in order to produce "standard" spelling. Clearly in various regions, especially the Northeast and South, some local adjustments will be necessary but our experience shows that this

presents little problem. Everyone has different levels of speaking as well as writing and to some extent we must all be bilingual in order to understand regional speech and national TV and movies. Written language intrinsically has elements of formality because of reaching larger audiences.

In the Childs Spelling System we also teach very early the simple method we use to represent *sounds* as distinguished from spellings. At the Basic Level this is not needed at first but will be as soon as any ambiguity is introduced; for example a long vowel. We use the macron (¯) to indicate a long vowel sound, the breve (˘) for a short one, at first only for a e i o u, and use descenders (//) if necessary to show that it is a sound picture not a spelling. The 18 basic consonant sounds have the usual letters for their first spelling. In writing about letter names we underline, or in print use italics.

s	t	v	w	y	z
k	l	m	n	p	r
b̲	d	f	g	h	j
ă	ĕ	ĭ	ŏ	ŭ	
ā	ē	ī	ō	ū	

In introducing the sounds and letters we use key words which will eventually provide the bridge; the sound /ă/ produces the response "apple a", the sight of a or its name produce "apple /ă/." The key words have all been revised to provide in each case a picturable common object. It is not acceptable to permit casual substitution of other key words as not only do hidden pitfalls exist but the necessary mastery depends on continuing repetition and support over the years. The key words provide a key to the correct sound as well as the bridge between sound and letter. Their use is continued throughout the basic level of instruction.

A very important technique used throughout this curriculum is reliance on the "discovery technique." In the hands of experts it can be used with students of all ages and abilities. In essence this technique consists of so structuring a learning situation that the student discovers the new item for himself and consequently grasps it more quickly and applies and remembers it better. The process is harnessing active rather than passive learning.

Teachers can learn to work this way if taught to do so, and they report finding it most interesting and rewarding. It is basic that the teacher learn not only how to teach this way, but what situations lend themselves to this treatment, and in which it is impossible, or inexpedient. "Rules" are based on observed regularities as, for example, when to use *-tch* or double a consonant before a suffix.

Basic Level—No Choice

Various orders of introduction of sounds and letters are possible, but one must always include both vowels and consonants or else pronounceable words are impossible. The letter *a* or *i* with its name and short sound usually comes first and is accompanied by consonants such as *t, m, b,* which make good combinations. We use not only real words but nonce-words, any pronounceable combination for practice, since the words are not to be learned to be spelled orally and in writing, or read. A new letter and sound is added and the additional words which it makes possible are spelled, written and read. The use of reading as an adjunct is recommended as providing variety and reinforcement for spelling as well as incidental help with reading. The steps covered at this level are as follows:

1. 44 individual speech sounds and 26 single letters, their names and print forms, their cursive written forms
   Keywords
   Analysis of words into sounds and syllables; accent; sentences into words; standard pronunciation
2. Basic sound-letter connections:
   1 letter or spelling for each sound
   10 long and short vowels, including the sound symbols represented there
   18 basic consonants
3. Extensions
   consonant blends initial, final and both
   doubled consonants
   vowel-consonant-e
   rules begun—modification of meaning and function of words by use of affixes multi-syllabic words
4. Irregular words
   basic vocabulary
   how utilize
   how teach
5. The dictionary for reading—skill at this level essential for later use in spelling

83

6. Applications in context
   dictation—the controlled situation
   composition—the personal creative situation

English Spelling

Basic Level

/ā/	a, a-e	/k/	k	/v/	v
/ă/	a	/l/	l	/w/	w
/b/	b	/m/	m	/y/	y
/d/	d	/n/	n	/z/	z
/ē/	e-e	/ō/	o-e		
/ĕ/	e	/ŏ/	o	/ch/	ch
/f/	f	/p/	p	/sh/	sh
/g/	g	/r/	r	/th/	th
/h/	h	/s/	s	/hw/	wh
/ī/	i, i-e	/t/	t		
/ĭ/	i	/ū/	u-e		
/j/	j	/ŭ/	u		

Advanced Level—Scientific Choices

The Gillingham Manual has always presented something of a mystery as to the best procedures for teaching advanced spelling. There are assumptions and implications but no explicit guidelines. In response to repeated inquiries I have organized a series of steps which have proved successful over many years.

1. Sounds—additional sounds; invariable spellings involving digraphs; selected spellings which are predictable.*

hw	ks	kw			
ch	sh	th	th	ng	zh
s	t	v	w	y	z
k	l	m	n	p	r
b	d	f	g	h	j
ä	ë		ö	oi	ou
ă	ĕ	ĭ	ŏ	ŭ	oo
ā	ē	ī	ō	ū	oo

* /ä/ /ë/ /ö/ represent the short vowels sounds modified by a following *r* as in /är/ /ër/ and /ör/.

2. Spelling Probabilities

Summary of reliable, predictable spellings dependent on place in the word, adjacent letters and accent. This classification was originally worked out by me many years ago and, when checked with the Hanna computerized study, after its publication in 1966, required only 2 minor alterations to produce the 90 percent figure of probability. The order of teaching now depends on the teacher's individual preference and basic logic, but is in process of being organized on the basis of experience.

Regular

A	/ā/	a a-e -ay		/oi/	-oy oi
	/ă/	a		/ou/	ou -ow
	/ä/	a		/o͞o/	oo
B	/b/	b		/o͝o/	oo
C	/k/	c k -ck -ke	P	/p/	p
	/s/		Q	/kw/	qu
D	/d/	d -ed	R	/r/	r
E	/ē/	e ee -ee	S	/s/	s -ss
	/ĕ/	e		/z/	s -ize
	/ër/	er	T	/t/	t -ed
F	/f/	f -ff	U	/ū/	u u-e -ue
G	/g/	g		/ŭ/	u a
	/j/	g j -dge -ge	V	/v/	v
H	/h/	h	W	/w/	w
I	/ī/	i i-e -y	X	/ks/	x plurals
	/ĭ/	i -y	Y	/y/	y
J	/j/	g j -dge -ge	Z	/z/	s -ize, z
K	/k/	c k -ck -cke			
L	/l/	l -ll		/ch/	ch -tch
	/'l/	-le		/sh/	sh ti
M	/m/	m		/th/	th
N	/n/	n		/th/	th
O	/ō/	o o-e -ow		/ng/	ng n
	/ŏ/	o		/zh/	si
	/ô/	or au -aw -all		/hw/	wh

3. Spelling Rules studied systematically

The Spelling Rules of the Gillingham Manual have been revised and regrouped.

4. Syllable concept in spelling longer words

Syllable division and accent for *spelling*, not reading, assist in making scientific choices between probabilities.

5. Further discussion of irregular words including analysis of lists to recognize and select them as well as ways of learning them

Letters not doubled: a i u h j k q v w x y
Letters sometimes silent: b c d e g h k l n p s t u

6. The dictionary for spelling

Some clues for looking up words whose spelling is unknown, in order of their probabilities, after first using the single, or "obvious," letter:

Irregular Spelling

/ā/	ai ea ei eigh	/ö/	ough
/k/	ch	/o͞o/	ou u u-e ui
/s/	c se	/o͝o/	u
/ē/	e-e ea ei is ey	/s/	c sc
/ĕ/	ea	/z/	z
/ër/	ar ir or ur ear	/ū/	eu -ew ui
/f/	ph	/ŭ/	o ou
/g/	gu	/w/	u
/ī/	ie igh y-e -y	/y/	i
/ĭ/	y -ie -ey	/z/	z
/k/	ch	/sh/	ch si
/l/	el al il ol		
/ō/	oa -oe ow		

7. Dictation and Composition

It is hoped that this summary of the Childs Spelling System will provide an example of one way in which the problem of better spelling can be solved. It has the advantage of twenty-five years of evolution in both theory and practice. It demonstrates the difference between "learning spelling words" and "learning to spell words".

NOTE: Mrs. Childs was overtaken by illness while this paper was in preparation and does not feel that it meets all the standards of her other published work. We believe readers will willingly overlook omission of certain appurtenances of scholarship, such as full indication of sources and the like, secure in the knowledge that this author always has the supporting evidence for her statements. We are happy that she has agreed to publication of this material which seems to her (but not to us) insufficiently "polished." It is so full of sound theory and practical utility that we are convinced it should appear here and now.

—Editor

Reading: An Auditory-Vocal Process

Alexander Bannatyne

Bannatyne Children's Learning Center
Miami, Florida

This article is abridged from a paper presented by Dr. Bannatyne at the 24th Annual Conference of the Orton Society, Baltimore, November, 1973.

It has always puzzled me that so many college reading courses and teachers continue to promote and use "whole word" or "sight" techniques with children who are either learning to read o. are in need of remediation. Even the popular phonics-linguistics methods, though a considerable improvement on basal readers, very often do not place sufficient stress on the auditory-vocal aspects of language nor on the correct sequential introduction of phonemes and graphemes. To date all method comparison research has come out in favor of code breaking systems for teaching reading (Chall 1967; Bannatyne 1971).

The English language is a phonetic language in which the visual symbols (graphemes) represent sounds (phonemes) and it is the 48 or so sounds which form words. The visual symbols (graphemes) never directly represent objects or concepts (meanings) except in ideographic or logographic languages such as Chinese. In a phonetic language meanings are always the property of (are associated with) the spoken word, not the printed word. The printed word is associated only with the spoken word.

English is a phonetic language. The word "phonetic" means that the visual symbols do in fact represent sounds, not meanings. However in my research reported elsewhere (Bannatyne 1971) there was no significant correlation between written spelling and visual sequencing skills as measured on the Revised Illinois Test of Psycholinguistic Abilities (ITPA) visual sequencing subtest. There was a significant correlation between written spelling and sound blending which is obviously an auditory vocal sequencing skill. The only significant correlation I could find between written spelling and visual processes was one correlation with *unit design memory* (single shapes *not* sequenced designs). Obviously there is no concept or object meaning attached to unit designs (single shapes) whether letter configurations or

geometric shapes. Incidentally, single grapheme words (e.g. *I, a*) are not exceptions, because each is a "sequence" of one phoneme-grapheme association and just as dependent on its sound for meaning as are longer words.

Key Definitions

These definitions are essential to a precise understanding of reading, spelling and writing processes. Some may be familiar, but some are new.

PHONEMES. The individual *sounds* in the language—there are approximately forty-eight in English. I use the term "phoneme" only for the *sounds* which individuals *hear* when they *listen* to words in an *auditory* way through the *ears*.

ARTICULEMES. Refers only to the forty-eight or so separate sounds *spoken* by individuals *vocally*, with the voice. Articulemes are *articulated*.

OPTEMES. This is a new term I recently invented (Bannatyne 1973). It refers only to the *visual* representation of phonemes and articulemes. We *read* optemes (decode) with our *eyes* when we *look at* or *see* print *visually*.

GRAPHEMES. We *write* graphemes (encode) when we use our *hands manually*. Graphemes are personally *written* or *hand-printed* symbols representing phonemes. The above definitions all refer to the individual child (or adult) who is actually and subjectively processing the language in one of its four forms, namely (a) listening to phonemes, (b) speaking articulemes, (c) seeing optemes, or (d) writing graphemes. Note that the terms listed above can conveniently be used in combination for dual processes. For example, in a two-way conversation we use phono-articulemes, in copying sentences we use optographemes while in taking down dictation we use phonographemes.

Phonemes, Graphemes, Orthography and Memory

There are approximately forty-eight phonemes in the English language with only twenty-six letters or combinations of letters to represent them. Some seventeen phonemes are vowels which leaves about thirty-one consonants. Most of these consonants are fairly regular in their phoneme-to-grapheme correspondence (*orthography*). Whereas some languages such as Spanish have a regular orthography (phoneme-to-grapheme relationship), others such as English are highly irregular. This is one of the major reasons why some of our children have difficulty learning to read, write and spell.

The greatest irregularity in English orthography occurs in the vowel system. For example there are eight ways of pronouncing the optographeme "ou." They are *cough, rough, you, journey, four, loud, could*, and *boulder*. On the other hand there are seven ways of spelling (coding into graphemes) the phoneme /ŭ/. They are *p*umpkin, *a*round, *r*o*u*gh, d*o*ve, th*e*, bl*oo*d and act*io*n. This irregularity is common to all vowel phonemes and graphemes.

Memory Processes Involved in Coding and Decoding Language

Memorizing the phoneme-to-grapheme (sound-to-symbol) code would seem to be a simple process. A glance at the following list should counteract any over-simplification of the problems facing our children as they learn to read.

Language Coding Memory Processes

1. Phoneme identification auditory memory (e.g. identify sound /t/).
2. Phoneme discrimination auditory memory (e.g. discriminate sound /t/ from /p/).
3. Phoneme sequencing auditory memory (e.g. recall /t/ – /e/ – /l/ – /e/ – /ph/ – /o/ – /n/).
4. Articuleme blending (auditory-vocal) sequencing memory (e.g. recall and vocally blend /t/ – /e/ – /l/ – /e/ – /ph/ – /o/ – /n/)
5. Phoneme auditory closure sequencing memory (e.g., complete the heard word: /re-ig-a-or/).
6. Optographeme unit identification memory (e.g. drawing a single meaningless design from memory).
7. Optographeme unit discrimination memory (e.g. discriminate design † from designs ‡ ✕ + |).
8. Phono-articuleme to optographeme memory (e.g. remember that /ē/ as a sound can be represented by the symbols "ee," "ea," "ie," "ei," "e," "i," "y," "ey").
9. Phono-articuleme to optographme sequencing association memory. (e.g. /k/ – /o/ – /f/ is spelled "c-o-u-g-h" when written). These associations are vertical (see below).
10. Grapheme acquisition—motor kinesthetic memory, both unit and sequential (e.g. write *a t* and *c*; write *cat*).
11. Opteme to grapheme association memory (e.g. *cat* in print is handwritten *cat* in lower and CAT in capital letters).

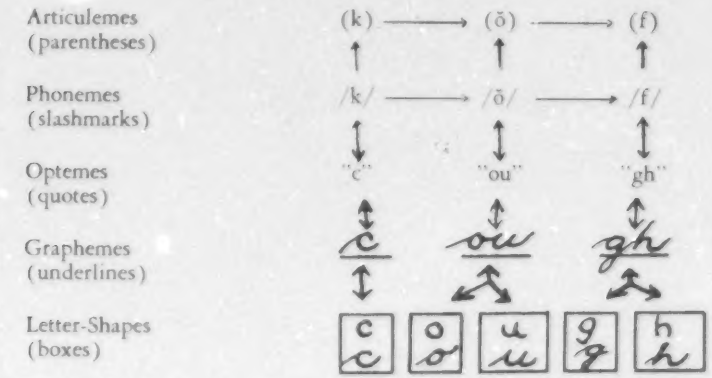
12. Word to word (syntax) sequencing memory, usually in sentences.

13. Word-to-meaning association memory and meaning-to-word association memory. (These are two slightly different *auditory word* memory systems, one being *recognition* and the other *recall*.)

The above list is the simplest possible statement of the memory processes involved in language coding.

The Relationships between the Parts of Coded Language

From my own research studies and those of others (Bannatyne 1971) I have developed the diagram below to indicate the basic processes (memory linkages) involved in learning to read, spell, and write. Note that I have used signs as conventions for the five aspects of the code, namely parentheses for articulemes, slashes for phonemes, quotes for optemes, underlines for graphemes and boxes for letter configurations (shapes).



The expert will notice that (for clarity) I have not inserted feedback links from articulemes to phonemes; nor have I put in a direct link between phonemes and graphemes which is also common in blind people, touch-typing, and in eyes-closed tracing exercises. Only two letter shapes are shown in this diagram, cursive and manuscript; but many others are possible, for example, capitals and italics.

Note that no sequencing memory is involved in the opteme row because (as mentioned earlier) research suggests visual sequencing is not correlated with written spelling or by implication with reading. Auditory-vocal sequencing *is* important in articulation and listening to phonemes. When *writ-*

ing graphemes motor-kinesthetic sequencing is an important adjunct to the auditory-vocal sequencing process and that is why my Psycholinguistic Reading, Writing and Spelling Program (Bannatyne 1969) contains a considerable amount of motor-kinesthetic writing and tracing activities. However motor-kinesthetic training exercises, which do *not* have auditory vocal components as a major part of the program, will be much less effective.

Auditory Vocal Components of Reading, Writing and Spelling

Articulation and Clear Speech

Because reading and writing are *coded* speech systems it follows that our ability to code and decode (write and read) will depend on how aware we are of the individual phonemes and articulemes in our speech. Thus, if a child's articulation of the phonemes in words is careless or incorrect he will have difficulty in coding them as graphemes and in decoding them as optemes.

It follows that a thorough training in (a) identifying and (b) discriminating phonemes and articulemes will enable the child to *match* accurately spoken phonemes with the printed optemes and graphemes representing them. The clear identification and discrimination of phonemes is an important aspect of our Psycholinguistic Reading, Writing, Spelling and Language Program. (See items 1 and 2 with examples in list above.)

Auditory Discrimination

I have come to regard auditory discrimination as a screening test for the child's acuity. Almost all the hundreds of learning disability children I have personally diagnosed have had good *general* discrimination. If there is a problem in this area it is usually with the seventeen key vowel sounds in English. In particular many disadvantaged children "do not bother" to discriminate the short vowels /ă/, /ĕ/, /ĭ/, /ŏ/ and /ŭ/. Even children who pass the usual (mostly consonant) auditory discrimination test often fail to discriminate short vowels in everyday conversation and reading practice. Hence we train children in vowel discrimination. (See item 2 with example in list above.)

Auditory Vocal Sequencing Memory

It is important to realize that auditory vocal sequencing memory (like articulation and phoneme discrimination) is an element of the spoken

language and as such does not involve vision or motor/kinesthetic handwriting. Auditory vocal sequencing memory is the ability to memorize unit-phonemes or unit-articulemes in short series, be they words, telephone numbers, or melodies. In numerous studies involving the Weschler Intelligence Scale for Children (WISC) or the Illinois Test of Psycholinguistic Abilities (ITPA) auditory sequencing memory (or digit span) has been shown to be a key deficit area for learning disability children. Most find it difficult to remember more than 4 or 5 sound units in a series. (See item 3 with example in list above.)

Phonemes and articulemes are the atoms of our language (not the molecules—these are morphs which are described below). Vowel phonemes and articulemes are less "clipped" or precise than are consonants and this "wooliness" of vowels accounts for the vowel identification and discrimination problems many learning disability children have. Thus it is important that we, as teachers, speak clearly and articulate precisely the sounds in words as an excellent model for our students to imitate. The auditory vocal memory span of children can be extended through two types of training, both of which should be used. The first is quite simply to keep extending the present span of phonemes by adding one more to their limit each time they achieve repeated successes at a given span level. Nonsense spans are helpful here. The second technique is chunking.

Chunking

When you rote memorize your telephone number you are storing it in your memory bank as a *serial unit*. This can be done with words and parts of words. /The/, /-ing/, /ex-/, /-ble/, and hundreds of other series of phone-articulemes can be stored as *chunks* but only after each "atom unit" within the series has been separately and thoroughly learned. I am definitely not advocating whole word or syllable methods of teaching reading without first insuring that each phoneme, articuleme, opteme, and grapheme within the word syllable or part-word has been rote-memorized (overlearned). You could not chunk your telephone number unless you had first learned each numeral thoroughly and knew how to count up to at least 10. Chunking is best taught through time-tested flash card work after the chunks have been explained, boxed, and worked through in detail as in our workbooks (Bannatyne 1969).

Morphemes

These are the meaningful units in words and any chunking should involve morphemes because many of them such as /ing/ and /ly/ are interchangeable between many words. The word /belatedly/ contains four morphemes, namely, /be/, /late/, /ed/, and /ly/, each of which carries a specific meaning. Children can profit greatly from understanding the nature of morphemes, how they contribute specific meanings and how they can be chunked into recognizable groupings after their elemental parts are instantly available in terms of rote memory.

The Alphabet

Learning the alphabet before or during the beginning stages of learning to read is a serious handicap. It is enough that a child has to learn and associate one set of sounds (48 phonemes) with their visual symbols (letter shapes); do not burden him with a second set of useless sounds, that is the names of the letters. For learning disability children the alphabet can be a disaster; they have great difficulty unlearning it to the point where they can associate *phonemes* with optemes and graphemes.

Sound Blending

Sound blending is a process of vocal synthesis or a fusing of a series of articulemes into a gestalt of sound. It is a process of running together the individual sound elements (articulemes) in a word so they are heard by a listener (and the speaker) as a serial or sequenced whole or chunk. Note, however, that even within that "whole word" series each articuleme can still be separately identified by a trained listener. Children can be, should be, and indeed, *must* be trained to detect the individual articulemic and phonemic elements (bits of sound) within words spoken by themselves or others. For example in the word /love/ all children, including those with learning disabilities, should be able to hear the sounds /l/, /u/, /v/ in that order. Sound blending is a muscular or motor function of the throat, chest, vocal chords, mouth and face. Auditory sequencing is a function of the ear and the auditory areas of the brain (temporal lobe) and is in many ways separate from (though closely integrated with) sound blending. It is almost certain that the brain has two separate language systems—the receptive-

sensory-auditory and the expressive-motor-vocal—both associated with one meaning system (Penfield and Roberts 1959; Bannatyne 1971).

Children must be extensively trained in sound blending, initially *away from* the printed word, as it has a significant and considerable correlation with written spelling and, by implication, reading (Bannatyne 1971). In our Psycholinguistic System, children have to sound blend and split apart all the words they are to learn to read and spell and this blending and splitting is done at the auditory-vocal level before they see the word in print or write it in the workbooks.

One of the better techniques for teaching sound blending and splitting is to group the word in morphemes or syllables as the splitting or blending process proceeds. For example, to blend the word /catalog/ teach the child to follow these steps:

c - a - t = a = l - o - g
ca - t = a = lo - g
cat = a = log
cata = log
catalog

To split a word such as /catalog/ reverse the process starting with the whole word and move up the above sequence until each phono-articuleme is pronounced clearly. Any new word the child is to learn should first be presented in this blending and splitting format at the auditory vocal level *before* the processes are both repeated with the word in print or when it is written by the child. (See item 4 with example in list above.) Remember too that the individual sounds and symbols involved must be known prior to this stage.

Auditory Closure

This term (which I invented in 1964) is the listening equivalent to sound blending. When a person hears a word he has to assemble the separate phonemes in that word into a gestalt of sound and then search in his auditory vocal word systems for a matching word. This matched word from his own "thesaurus" is then further associated with its meaning, which incidentally is almost always non-verbal. When we hear a strange accent or a word pronounced in an unfamiliar way we use auditory closure to search for its matching equivalent so we can identify the word correctly.

Among the slight distortions which cause us to match the words of other people to our own inner versions are indistinct words, words heard against a noisy background as in a busy classroom, unfamiliar inflections, accents and dialects, omitted phonemes and mispronunciations.

Auditory closure, though an auditory vocal process, is very important in reading. When a child or adult is learning to read unfamiliar or new words he has to sound out those words as a series of articulemes to crack the phonetic code. Most often this sounding out results in an attempted blending which is not a completely correct version of the accepted pronunciation (or rather of his own local version). He has to match his blended word with the "best fit" equivalent in his own auditory vocabulary. If he does so successfully he will then go on to the meaning if he knows it. Thus, to successfully read a word meaningfully a person has to *identify* and recognize each phoneme by *splitting* the word into its "bits," then *blend* them as articulemes into a gestalt. This gestalt blend is *heard* as a group of *coalesced phonemes*. The auditory processes then exercise *closure* to find a best fit *match* for this particular phoneme series. The match is "pulled out" as a familiar word at the auditory level and if its meaning is known that image or concept is also then pulled out into consciousness. Note that we may close on a word successfully but may not know its meaning. Most readers will close on "fibula" as an English word but will not know its exact meaning. (See item 5 and example on list above.)

Auditory closure can be taught. Like blending it is best taught first at the auditory vocal level. The teacher can pronounce the words or sentences to be learned in a variety of ways and the students must strive to close and pronounce the words correctly. Use all the ways mentioned earlier in this section to distort words and make up games to see who can identify them by matching successfully. Auditory closure games (without books or print) can easily be taped on cassettes.

Meaning and Comprehension

The printed or written word carries no meaning. Only words which are spoken or heard carry meaning and are comprehended—if understood at all. There is no getting around the fact that English is a phonetic language, and until those little visual (or in the case of the blind, tactile) symbols are decoded into *sounds* they cannot be meaningfully interpreted. There is no such thing in English, or in any other phonetic language, as a visual

language. If a neurosurgeon has to excise (cut out) the appropriate auditory areas of the brain of an experienced adult reader, the patient will not only be unable to read, he will have no language. The hypothesis of an *independent* visual language system in experienced readers independently associated with meanings does not hold water (Bannatyne 1971). Thus when we wish to teach meanings and comprehension most efficiently, it is done at the auditory-vocal, conversational level.

Explain word and sentence meanings to students through discussion; then, when all is made clear, present the printed word as its phonetic code.

Visuo-Spatial Factors

The part played by vision in reading is relatively simple. Research demonstrates (Bannatyne 1971) that only the *single* letter designs and optographeme unit designs (eg. "wh", "A" and "igh") are important visually speaking. Thus, all the beginning reader has to remember visually is each of the twenty-six letters of the alphabet plus their common clusterings in the form of optemes or graphemes such as "ph", "ough", "th" and "ei." These are *single* phoneme equivalents, not multiple collections of sounds such as the chunks /ing/ or /ly/.

Optemes and graphemes in clusters of two or three letters are called digraphs and trigraphs respectively. It is very important to realize that digraphs and trigraphs (but not blends in which the separate sounds can be heard) *must be taught both visually as a single "design" and phonetically as a single phono-articuleme*.

In my research using the Revised ITPA, visual sequencing was not related to "visual" written spelling. Only unit (single) designs or letter configurations (and I include here digraphs and trigraphs as single unit designs) were significantly related to written spelling. Thus, a *memory for unit designs* (or configurations), as tested by the Graham-Kendall Memory for Designs Test and the Bannatyne Visuo-Spatial Memory Test, is important to achievement in written spelling and, by implication, in reading. Thus, in the original diagram at the beginning of this paper we see no sequencing arrows across the *opteme* (visual) row. The association of optemes to phonemes is vertical and it is the phonemes which provide the cross-association sequencing in words. This is not really surprising when one stops to consider the nature of a phonetically coded language.

The sequenced phonemes build visual or written words by identifying

(optemes) or pulling out (graphemes) the letter characters (as monographs, digraphs, or trigraphs) individually, much as an old fashioned typesetter in a printing works selects the letters from fonts of lead type. Research people should note that even if visual sequencing was (or proves to be) correlated with reading and written spelling, such a finding would in no way invalidate the phonetic auditory-vocal sequencing model explained above and in the rest of this paper. Auditory vocal sequencing and visual sequencing are not incompatible hypotheses; each must stand or fall (in research) in its own right. In my research (Bannatyne 1971) visual sequencing as in the revised ITPA was not correlated with written spelling or, by implication, with reading.

Because the memory for *unit* designs is so important, learning disability children with deficits in this skill will need prescriptions for training their design memory. (See items 6 and 7 with examples in list above.)

Phoneme-to-Grapheme Association Memory

One of the most important memory associations (links) in learning to read and spell is the vertical association of phoneme (and articuleme) with the opteme and grapheme. Another important factor already mentioned is a reliable auditory vocal sequencing memory for the phonemes (and articulemes) in any given word. This auditory vocal sequencing memory for the sounds in words is a natural one, but it varies with both training and talent. In fact, as stated earlier above, most L.D. children have auditory sequencing memory deficits which must be prescriptively trained (Bannatyne 1971, Rugel 1974).

However, the vertical (inter-sensory) phono-articuleme to optographeme memory links must be equally well overlearned both as independent sound-symbol pairs, *and* in words when spelled. Color coding only the vowel phoneme-to-grapheme associations helps the memory as a mnemonic aid and this is a feature of the Bannatyne Psycholinguistic Reading, Writing, Spelling and Language System. Words should never be spelled out loud using the names of the letters from the alphabet. Spelling should always be written and the graphemes should be *sounded out* as articulemes as the word is motor-kinesthetically written. In a vague kind of way the WISC Coding Subtest score gives one a rough indication of the overall difficulty a child is having with written spelling. Coding depends on association memory, auditory-vocal sequencing (numbers 1–9), motor-kinesthetic skills and visual-motor

coordination. (For examples of phoneme to opteme and grapheme memory association see items 8 and 9 in the list above.)

Fluency or Rate of Reading

Only after all the above factors have been thoroughly taught in terms of any particular set of words should the reading process be deliberately accelerated to compress the speed with which the brain "computer" associates all the bits in the manner described. All the arrowed links of all the bits (phonemes, optemes, etc.) in the diagram have to be speeded up but do *not* think this means transferring to a visual modality. Far from it. The auditory vocal brain can easily pull out and cross associate pairs or series of bits (phonemes, optemes, etc.) at hundreds a minute without difficulty in trained adult readers, while children are at various stages in developing this skill. The auditory-vocal-phonetic-language model still stands without visual sequencing. How can fluency best be trained for speedy reading from the beginning reading stage?

Chunks, Syllables, Morphemes, Prefixes and Suffixes

Once a word is known to the child at a slow code-breaking rate of reading it must be compressed as described in the previous section. The best compression units to use are chunks composed of common syllables, morphemes, prefixes, suffixes and any other parts of words one cares to employ. We put these (together with small complete words of one syllable) on sets of flash cards and take the child through them repeatedly against the stop watch until they are overlearned. The child always gets points for the number of seconds of improvement he achieves on subsequent runs of any one set of cards. We also use the stop watch points-for-seconds-of-improvement technique for story reading and key word list reading in the workbooks, always of course, *after* all the earlier stages of preparation and learning are complete.

Motor-Kinesthetic Factors

The motor-kinesthetic elements and processes when learning to read, write, and spell are extremely important. In my research the motor-kinesthetic aspects of written spelling were much more crucial than the visual. (I am not saying one can do without *unit* visual memory—even though the blind do. I am only assigning relative importances to the sensory-motor modalities

as used in reading, writing and spelling.) The voice itself, especially in articulemic sound blending, is a motor-kinesthetic (muscular) function mostly out of the frontal lobes of the brain.

The saccadic movements of the eyes as they move jerkily along a line of print must be carefully trained in tracking exercises which do *not* involve moving or swinging objects. When we read nothing moves except the eyeballs which are controlled by muscles regulated by the motor areas at the top of the frontal lobes. We train visual tracing by teaching the child to read, write, and spell in workbooks carefully constructed for that express purpose—as well as all the others.

Writing as a motor activity is taught equally systematically, starting with single, large-sized graphemes which are thoroughly examined, traced, practised, written, and overlearned at the same time as the phono-articuleme to grapheme associations are being made.

I am sure there is a strong, motor-kinesthetic sequencing skill involved in reading, writing, and spelling simply because the human body is physically designed so that we can memorize fine and gross motor sequences very efficiently. Hence our great emphasis on the correct training of saccadic eye movements, as well as tracing and writing in all its forms.

Form and Object Constancy, Mirror Images, Reversals and Rotations

It is not possible to do more than briefly outline here details of the complex nature of configuration or form constancy, reversals and mirror images which are fully described elsewhere (Bannatyne 1971, 1973).

Briefly it can be said that children grow up to school age to appreciate that objects in the environment such as trees, cars, tables, people, and pennies remain the same whatever the angle from which they are viewed. However, when they come to be taught the alphabet letter configurations in school this *Law of Object Constancy* is shattered (for letters only) because "b" viewed from the other side is no longer /b/ in its meaning but /d/. Hence children have to learn to suspend the visual law of object constancy when faced with alphabet shapes; a task that viso-spatially competent learning disability boys and girls find cognitively difficult (Money 1966).

A second visuo-spatial problem complicates matters. In my research found Samuel Orton's (1937) theory of hemispheric mirror image transfer to be validated. Orton stated that if the mirror imaged letter "b" was learned

in the *right* visual field (with which we read in English) it would be permanently registered as "b" in the occipital lobe of the left hemisphere of the brain. It would then *automatically* be transferred by the brain to the right hemisphere as a "d" *shape* but with the phoneme /b/ still associated. The unfortunate child is then taught the opteme shape "d" as phoneme /d/ and this too registers in the left hemisphere and is transferred automatically to the right as "b" but with the phoneme /d/ associated. *Any* of these four letter *shapes* can now be projected onto the page when writing or recognized in reading as either /b/ or /d/ in an incredible tangle of sounds and symbols. Add to "b" and "d" the letter shapes and sounds of "p" and "q" and the confusion is complete.

The *visuo-spatial brain tends to be right-hemisphere dominant*—an hypothesis I put forward at the first IRA Congress in Paris (Bannatyne 1966). This right hemisphere spatially dominant brain tends to mirror image easily (Bannatyne 1971). There is a third problem for visuo-spatial children. As they prefer their eyes to survey the environment at random in three dimensions, their eyes when scanning lines of print, can move from right to left as easily as from left to right. But in moving from right to left the individual letter configurations such as "b" are reversed into their mirror imaged shapes, in this case "d." This right-to-left scanning also accounts for common word reversals (e.g. "was" becomes "saw").

On two separate research studies using memory-for-designs tests we have found that girls rotate designs or choose rotated designs more than do boys. This contradicts most of the neurological impairment theories currently in vogue which claim most leaning disabilities are the result of brain dysfunction especially in boys. Inasmuch as it is negative evidence against the hypothesis that brain impairment is the *major* cause of learning disabilities, it lends support to the overwhelming evidence that *most* learning disability children are visuo-spatially competent and have auditory vocal types of deficits. (McLeod 1965; Bannatyne 1971; Rugel 1974). There are several techniques for remediating mirror imaging and reversal problems which space does not permit me to describe here (Bannatyne 1973, page 55).

Teaching Reading, Spelling, Writing and Language Psycholinguistically

This complete method of teaching, reading, writing and spelling (Bannatyne 1969) was developed to include all the techniques, sensori-motor

processes, and principles described in this paper, plus numerous other devices and methodologies found to be of value in other resource materials. No phoneme, articuleme, opteme or grapheme is to be found anywhere in the words or stories of the program until it has been thoroughly taught first at the auditory vocal level and then at the motor kinesthetic level. This is done in each sensorimotor area and psycholinguistic modality with an emphasis on automatic memory processing and this *includes the automatic association of meaning* with the word in each of its forms. The forty-eight phonemes with their articulemes, optemes and graphemes are introduced one at a time, sequenced, units are identified, discriminated, blended, split, closed, and cross-associated in a variety of ways. Syntax and word meaning are taught from the outset while training is given in tracking and scanning. Through an initial use of three letter words, code-breaking is encouraged. Other memory reinforcers include the use of a system of silent letters to regularize the orthography of the language, a unique system of color coding only the vowels, key words and pictures, and a very large type face. The stories are geared to all ages and use is made of humor, games and puzzles. The entire system is fully programmed for both students and teachers. When working with learning disability children we always remediate or train the deficit areas while working through the program as a whole.

Motivation

Although this paper is primarily concerned with the auditory vocal psycholinguistic aspects of teaching reading, spelling and writing, the contribution of motivation is so very important that it must be emphasized here.

We use a comprehensive points reinforcement system which is tied into every aspect of our programs. A very happy positive teacher-child bond is developed and praise is used liberally (A. Bannatyne and M. Bannatyne 1973). Humor, high interest materials, and stories all make the program inherently interesting and thus motivating.

Body Image/Communication

Based on Luria's (1961) research into the development of voluntary movement and its relationship to instructional language Maryl Bannatyne (1973) constructed the Body Image/Communication Program to help children improve their control of voluntary movement, their auditory sequencing memory, auditory discrimination and their body image. It is useful for

training those children with auditory sequencing deficits, especially if they also suffer from motor incoordination and allied problems.

References

Bannatyne, A. D. 1966. Verbal and spatial abilities and reading. In proceedings, First International Reading Association Congress, Paris, France. Newark, Delaware: International Reading Association.

Bannatyne, A. D. 1969. *Psycholinguistic System: A Reading, Writing, Spelling and Language Program.* P.O. Box 909, Rantoul, Illinois: Leaning Systems Press.

Bannatyne, A. D. 1971. *Language, Reading and Learning Disabilities.* Springfield, Illinois: Charles C Thomas.

Bannatyne, A. D. 1973. *Reading: An Auditory Vocal Process.* San Rafael, California: Academic Therapy Publications.

Bannatyne, A. D. and Bannatyne, M. 1973. *How Your Children Can Learn to Live a Rewarding Life.* Springfield, Illinois: Charles C Thomas.

Bannatyne, M. and Bannatyne, A. D. 1973. *Body Image/Communication: A Psycho-Physical Development Program.* P.O. Box 909, Rantoul, Illinois: Learning Systems Press.

Chall, J. S. 1967. *Learning to Read: The Great Debate.* New York: McGraw-Hill.

Luria, A. R. 1961. The genesis of voluntary movements. Voprosy Psikhologii, No. 6, pp. 3–19.

McLeod, J. 1965. A comparison of WISC sub-test scores of pre-adolescent successful and unsuccessful readers. *Aust. J. Psychol.* 17 (No. 3):202–228.

Money, J. 1966. The laws of constancy and learning to read. In *International Approach to Learning Disabilities of Children and Youth.* San Rafael: California: Academic Therapy Press.

Penfield, W. and Roberts, L. 1959. *Speech and Brain-Mechanisms.* Princeton, New Jersey: Princeton University Press.

Rugel, R. P. 1974. WISC sub-test scores of disabled readers: A review with respect to Bannatyne's recategorization. *J. Learning Disabilities*, 7(No. 1).

A Diagnostic and Prescriptive Child Study Center for Children with Specific Learning Disabilities

To honor Dr. Gertrude G. Justison, her staff at the Child Study Program of Howard County (Maryland) prepared a series of papers which formed the backbone of an all-day institute designed to share the experiences of a county public school system which is demonstrating one way of meeting the needs of its language disability children. Some of these papers are presented here.

At a luncheon on the day of this institute, which was held as part of the 24th Annual Conference of the Orton Society in Baltimore, Maryland, Dr. Justison was given a special award in recognition of her outstanding work. The citation for this award and Dr. Justison's remarks in acceptance of it, as tape-recorded, are presented here as an introduction to the papers.

It is with deep sadness that we report the death of Gertrude Justison in February, 1974. The institute, and especially the luncheon, were a joyous celebration, and have become a fitting memorial to her vibrant spirit.

Photo by Breck Chapman

Dr. Justison at award luncheon.

Tribute to Dr. Gertrude E. Justison

Roger E. Saunders
President, The Orton Society

Dr. Orton and Miss Gillingham worked to bring together the fields of medicine and education to help children with learning problems. With our convention in Baltimore, we could not pass up the opportunity to recognize one who is working so effectively to coordinate educational and medical expertise to train teachers and serve children.

Dr. Gertrude G. Justison is the Coordinator of the Child Study Center program in Howard County, Maryland. She designed and now leads this program which provides interdisciplinary training of teachers in the diagnosis and remediation of children with learning disabilities.

Trudy brings with her experience as a nurse, a teacher, a principal, a supervisor, and a professor. She has contributed to the literature in the varied fields of Human Development, Mental Retardation, Learning Disabilities, and Mental Health. As a consultant, she has willingly shared her knowledge and skills with audiences ranging from individual classroom teachers to international professional organizations.

She has served as the United States delegate to the Third Pan-Pacific Conference on Rehabilitation in Japan, the First Congress on the Scientific Study of Mental Deficiency in France, and the European Special Education Association in Sweden. Trudy has been the Special Education consultant to the Boards of Education of Uruguay and Peru, as well as others throughout the United States. She has also served as a member of the Maryland Governor's Commission on Developmental Disabilities.

But more important than Trudy's credentials is the effect she has on those associated with her. She has the quality—not only the skills and the methods, but the *quality*—of communicating to her staff the concern for individual integrity of each child. She freely shares her knowledge and supports and guides her staff with unmistakeable concern for their personal development. It is a tribute to her that she touches with love the lives of her staff and through them the lives of their students.

Dr. Justison responds

I could not feel right about accepting this award except that it also honors all of the Howard County people I love very dearly. I would like

to thank the Assistant Superintendent of the County Public Schools, the two appointed Board of Education members who are volunteering not just their time, but their lives—24 hours a day—and also the dedicated and committed staff. I'd like all of you, including every member of the Child Study Center Staff, training teachers, consultants, and aides in the Program, to stand, please, because I accept this honor, even though it originated with you, in your behalf.

I really believe Providence had a hand in getting me to Howard County as a climax of my experiences as a nurse, a teacher, and a principal. But none of this would have been possible without the blessings and support of the Board of Education, the Administration of the Public Schools, and the Staff of the Child Study Center, very few of whom I appointed. I think Providence appointed them and so made my life very satisfying and gratifying. I do not know how or why I have been so blessed; I am not at all sure I deserve all these fine, dedicated people; but I am sure that I really appreciate them.

For making it all possible, accept my heartfelt gratitude. The sentiments, the setting, and the whole spirit of the occasion have made it a very special day in my life, shared with very special friends.

I. Overview of the Child Study Center

Sara J. Little, Marilyn Savage, Kathleen Somers, A. Alleane Taylor, Franklin Tinney, and Sherrill Werblood-Manges

Introduction

The current Child Study Center program in Howard County (Maryland) is quite different from the original 1968 program, which was based on a plan devised by a parent group under the leadership of Hank Preiser and Media Pennington. That plan called for a child study center to provide interdisciplinary diagnostic and remedial services for elementary school age children who needed more services than were then available in the public schools. With partial support from ESEA Title VI funds, the Child Study Center staff was organized to include a coordinator, a psychologist, two diagnostic/prescriptive teachers, four aides, and two secretaries. Part-time consultant services were available from a speech and language clinician, a nurse, a pediatrician, and a psychiatrist.

The Center was housed in one of the elementary schools, and children from elementary schools throughout the County were referred for placement in one of the Child Study Center classes. Several of the children referred were found to have severe emotional disturbances, and later were placed in the newly opened Howard County branch of the School for Contemporary Education.

In January 1970 the coordinator, Dr. Gertrude G. Justison, proposed a redeployment plan that would serve more children and teachers by providing a team effort in local schools. The plan differentiated roles of the staff in meeting the needs of children with varying kinds and degrees of disability, and shifted emphasis from the severely disturbed to those able to remain in regular classes with program support.

The primary focus of the new plan was the training of specialist diagnostic/prescriptive teachers while providing service to students in their own schools. The emphasis of the current program is still on training. The first year of Child Study Center operation in a school is a full-time training effort, involving not only the specialist teacher and aide for the Resource Room, but also the principal, classroom teachers, and other faculty.

When a school's request for a Child Study Center has been approved by the central administration of the Howard County Department of Education, the principal chooses from among the faculty one person to be trained as a Resource Room teacher and hires a Resource Room trainee aide. A trainer teacher and a trainer aide are assigned to the school full time for one year to train the two staff members who will remain there and to establish the Resource Room program.

The efforts of the local school Resource Room staff are supported by consultants from the interdisciplinary team. This service is not limited to the training year, but continues in order to maintain quality control and support of the local school team. At least monthly, the entire Child Study Center staff meets together for two and one-half hours of in-service training. Through conferences, demonstrations, and local school in-service training sessions, the staff provides training and consultation to principals, classroom teachers, and other area specialists. Also, the Center maintains a library of classic and current texts, articles, and journals in the field of learning disabilities and related areas.

The second aspect of the Child Study Center program, that of pupil service, focuses on children in kindergarten through third grade who have one or more specific learning disabilities. As defined by the National Advisory Committee on Handicapped Children of the Office of Education of the United States Department of Health, Education, and Welfare, and as adopted by the Association for Children with Learning Disabilities and the Maryland State Department of Education, a specific learning disability is a

> disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written language. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do NOT include learning problems which are due primarily to visual, hearing, or motor handicaps, to mental retardation, emotional disturbance, or to environmental disadvantage.

In each Child Study Center school district diagnostic/prescriptive/remedial service and interdisciplinary "in-depth" diagnosis is available. Each child receives at least 45 minutes per day of Resource Room service. Each year approximately twenty children per school receive Resource Room service, and about thirty children per year have received in-depth diagnostic

service. In schools where there is no Child Study Center Resource Room interdisciplinary diagnostic service is available through Pupil Personnel referral. Consultative service is available for any of the twenty-three elementary schools in Howard County with priority given to Child Study Center pilot schools.

The program is sponsored by the Howard County Board of Education with State SLD funding. County funds provide supportive services, equipment, and materials. The program is projected to add three schools per year to the eleven currently in operation.

The organization of staff is designed to consider the whole child. The interdisciplinary team has been led by the coordinator, Trudy Justison,* the administrator and representative to the central administration and an educational consultant who also has been responsible for Child Study Center staff development and jointly responsible with principals for supervision of Resource Room personnel.

A second member is the school psychologist, Alleane Taylor, whose functions encompass psychological evaluation, educational and behavioral management consultation, and staff development and supervision.

The speech and language clinician, Jim Grover, trains and supervises Resource Room specialists in the administration of the Illinois Test of Psycholinguistic Abilities, does speech and language evaluations, and serves as an educational consultant.

The full-time team is completed by the nurse consultant, Gail Reed, whose services include home visits to obtain developmental and medical histories; serving as a liaison with all medical and paramedical consultants, private physicians, and public and private health agencies; assisting the pediatrician in physical and neurological examinations; testing hearing and vision; and training the Resource Room staff to do threshold audiometric screening.

Part-time consultants on the interdisciplinary team include a pediatrician, Dr. Herb Solomon; a child psychiatrist, Dr. Ulku Ulgur; and two visual consultants, Drs. Paul Lewis and Bernie Saltysiak.

The Child Study Center is fortunate to have the services of two excellent secretaries, Ethel Hinton and Liz Waters, who facilitate preparation of the voluminous reports and communications necessitated by this kind of program.

* As of November, 1973.

Referral Procedures

Children are referred for service by classroom teachers. The initial request is sent to a school-based screening committee which is composed of the principal, the Child Study Center Resource Room teacher, the Specific Learning Disabilities and other special education teachers, the reading specialist, and the speech therapist. In addition, other professions are also invited to join the committee meetings. The screening committee reviews the referrals and related records and, in most instances, assigns the child to a specialist for diagnosis. If Child Study Center services seem appropriate, a referral form is then completed from the cumulative record and classroom observation (Figure 1).

Note that the referral includes past evaluative records as well as hearing and vision screenings since many children will show inconsistent patterns in their performance. Also, since the checklist is rather short, the teacher is asked to note in his/her own words the types of problems the child is experiencing in the classroom. The left side of the checklist samples the academic manifestations of learning disabilities while the right side gets at the more subjective behavioral descriptions frequently accompanying learning problems.

Once the teacher has completed this referral form, he/she submits it to the principal for approval. If the principal approves it, the referral is forwarded to the Child Study Center Resource Room teacher who will then gather more data by conferring with other teachers and observing the child. The decision to accept or reject the referral at this point rests with the Resource Room teacher.

For referrals accepted by the Resource Room teacher, a conference is scheduled to include both of the child's parents, the Resource Room teacher, the principal, and the referring teacher. At this conference the reasons for the referral are explained, as is the Child Study Center operation. The parents are offered diagnostic services for their child and are asked to sign either a request for or a rejection of service. From the very beginning the full support of both parents and the principal is necessary for the success of the efforts of the Child Study Center team.

Diagnostic Procedures

Once a parent conference has been held and a permission form signed by both parents has been received, an educational assessment begins. A wide

Howard County Public Schools
Columbia, Maryland

CHILD STUDY CENTER SPECIAL EDUCATION
REFERRAL TO CHILD STUDY CENTER (Pilot Schools)

CHILD'S NAME _____ Grade _____
Date of Birth _____ Teacher _____
Mother _____ Occupation _____ Phone _____
Father _____ Occupation _____ Phone _____
Address _____ Home Phone _____
Previous Test Results: (Use other side if necessary)

Name of Test with Subtests	*Date Given*	*Scores*

Hearing Screenings: Vision Screenings:
Date _____ Passed-Failed _____ Date _____ Passed-Failed _____
_____ _____ _____ _____

Evidence of Learning Disability: _____

Give level of performance in grade level terms: Reading _____
Writing _____ Spelling _____ Math _____
Check if Observed:

_____Poor memory or recall
_____Reversals in reading
_____Reversals in writing
_____Cannot write or form letters
_____Sloppy or poorly spaced written work
_____Assignments not completed
_____Poor phonetic skills
_____Immature, delayed speech
_____Clumsy or awkward
_____Mistakes own left from right
_____Loses place while reading
_____Poor drawing of man or basic shapes compared with peers' drawing
_____Omits words while reading (omits more than one out of every ten)
_____Can read orally, but poor comprehension
_____Daydreaming
_____Withdrawn
_____Difficulty in group participation
_____Poor peer relationships
_____Destructive of materials
_____Hyperactive
_____Distractible
_____Aggressive
_____Short attention span
_____Compulsive behaviors (specify)
_____Difficulty in following directions
_____Excessive inconsistency of performance
_____Trouble organizing work
_____
_____
_____

Has been retained (give grade) _____ Known to Health Department _____
Has had Corrective Reading _____ Known to Pupil Personnel Services _____
Has had Speech Therapy _____ Known to Columbia Clinics _____
We would appreciate any further comments—please use other side.

_____ _____
Teacher's signature and date Principal's signature and date

_____ _____
CSC Teacher-Date Referral Received Date Copy Received CSC Home Office

Figure 1

range of formal educational tests is available to help determine current achievement levels and provide diagnostic information about the child's learning processes. In addition, many informal procedures have been devised or adapted for use in all of the Resource Rooms to supplement standardized measures.

Included in every child's diagnostic evaluation is the Illinois Test of Psycholinguistic Abilities. Also, the measures in Table 1 are administered to each child as appropriate for their grade placement.

Table 1
PRE-POST TEST BATTERY

Botel Word Recognition Test
Burks' Behavior Rating Scale
Gray Oral Reading Test
IOTA Word Test
KeyMath Diagnostic Arithmetic Test
Slingerland Pre-Reading Screening Procedures
Slingerland Screening Procedures for Identifying Children with Specific Language Disability
Siosson Intelligence Test for Children and Adults
Wide Range Achievement Test—Spelling section
Illinois Test of Psycholinguistic Abilities

In addition to the diagnostic information provided, these also serve as a pre/post research tool to evaluate the child's growth and as a measure of our own program's effectiveness.

In order to satisfy the need for further diagnostic information for each individual child, the Resource Room teacher selects a battery of measures from these available tests (Table 2).

Table 2
DIAGNOSTIC TESTS

I. Ability Test
   1. Peabody Picture Vocabulary Test

Table 2—Continued

II. Learning Profile Batteries which compare different modalities for learning
  1. Detroit Test of Learning Aptitude
  2. Valett—Psychoeducational Inventory of Basic Learning Abilities
III. Kindergarten Screening Test
  1. Metropolitan Readiness Test
  2. Meeting Street Screening Test
  3. Slingerland Pre-Reading Screening Procedures
  4. Votaw—Reading Readiness Test
IV. Academic Achievement Batteries
  1. Justison-Peterson Informal Educational Evaluation
  2. Peabody Individual Achievement Test
  3. Wide Range Achievement Test
V. Gross Motor
  1. Ayres-Justison—Gross Motor Screening Record
  2. Valett—Psychoeducational Inventory
  3. Kephart-Purdue—Perceptual Motor Survey
VI. Visual Motor
  1. Trudy Form Copy
  2. Frostig—Developmental Test of Visual Perception
  3. Benton—Visual Retention Test
  4. Berry and Buktenica—Developmental Test of Visual-Motor Integration
VII. Language
  A. Auditory Perception
    1. Wepman—Auditory Discrimination
    2. Vita Schach—Phonics Readiness Check
    3. Goldman-Fristoe-Woodstock—Test of Auditory Discrimination
  B. Conceptual
    1. Boehm Test of Basic Concepts
    2. Englemann—The Basic Concept Inventory
VIII. Reading
  A. Word Recognition
    1. Daniels' Word Recognition Test
  B. Oral Reading and Inventories
    1. Betts—Informal Reading Inventory
    2. Spache Diagnostic Reading Scales
    3. Learning Methods Test
    4. Informal Reading Inventory
    5. Monroe—Visual-Auditory Learning Test
    6. Gates-McGinitie Reading Achievement Test
IX. Math
  1. Buswell—Fundamental Processes in Arithmetic
  2. KeyMath Diagnostic Test

The teacher in training receives extensive instruction, practice and supervision in administering and interpreting these measures.

In addition to the regular county-wide audiometric and visual screening

services, all children in Child Study Center receive a more thorough audiometric screening. Threshold testing is done, rather than screening only at 25 decibels, and a wider range of the speech sound frequencies is included.

As soon as the Resource Room teacher begins the diagnostics, he/she shares any relevant finding or information with the classroom teacher. Once the initial evaluation is completed, the Resource Room teacher develops a written prescription which is shared in a formal conference with the teacher and principal. This is followed by a conference with the child's parents to communicate the diagnostic findings and plans for remediation. Of course, where appropriate the Resource Room teacher communicates this information to other specialists in the school, such as the physical education teacher, speech therapist, or reading teacher. The goal is to coordinate our services with the programming in the classroom as well as to maintain close communication with other professionals working with the child. The teacher in training is supervised in the interpretation of the evaluative findings and in the integration and translation of these separate pieces of data into an appropriate program prescription.

Soon after testing and observation is complete, groups of two to six are established for instruction according to the identified needs of the children. Each child receives at least 45 minutes per day of diagnostic/remedial teaching. The use of the term "diagnostic" is included here to emphasize the continuous re-evaluation of the child's needs and progress, as well as our own teaching methods.

In-depth Interdisciplinary Evaluation

When the educational evaluation has been completed, there may still be a need for further evaluation. The Child Study Center Resource Room teacher then presents the diagnostic data to the consultant team (including the coordinator, psychologist, speech and language clinician, and nurse). The presentation includes observations, test data, techniques of remediation used in the Resource Room, reports from the classroom teachers, and any other significant data from parents and/or school personnel.

A decision is made by the full staff as to which additional services are necessary. A conference is held with the child's parents to share the data obtained thus far, to explain the need for further evaluation, and to request permission for an in-depth interdisciplinary study (at no cost to the

family). Such studies include one or more of the following evaluations but not necessarily all.

Developmental/Medical History

The Child Study Center nurse goes into the child's home for an interview with the parents in order to obtain information for the developmental, social, and medical history. Data collected include information about home environment and family constellation; prenatal, perinatal, and postnatal history; information about growth and development including motor and speech and language milestones; activity level; emotional development and adjustment. A medical survey is taken which includes a history of diseases, operations, and chronic illnesses. Information is gathered about the family history of illnesses and learning disabilities. Finally, and most importantly, the family is asked to give their impression of the child and the difficulties he may be having.

Medical Examination

The pediatric consultant comes to the Child Study Center office one-half day per week. When an appointment is arranged, the parents bring the child to the office for the examination which usually takes an hour. The pediatrician then discusses his findings with the parents.

The examination includes checks of all body systems, a neurological examination which does not include an EEG, and a gross motor assessment. A complete blood count and urinalysis are taken.

The pediatrician's report includes comments on the child's speech and sociability, as well as his impressions of the child and his recommendations. He is also available for staff conferences.

Possible recommendations for further study include a neurological examination with an EEG, an allergy survey, a psychiatric assessment, an ear-nose-throat consultation, testing for blood sugar level, an audiological or a vision examination. If recommendations are made by the pediatrician, they are discussed with the parents and the family physician is notified. The family physician and the parents make the final decision regarding the recommendations.

Psychological Evaluation

The Child Study Center psychologist usually comes into the school to administer a battery of tests for the psychological evaluation, including the

Wechsler Pre-school and Primary Scales of Intelligence (WPPSI) or Wechsler Intelligence Scales for Children (WISC), the Peabody Picture Vocabulary Test (PPVT), the Bender Visual Motor Gestalt Test, and the Draw-a-Man Test. Additional measures are used as appropriate.

The psychological report includes the reasons for referral, test observations, test results, summary, and recommendations. A detailed analysis of subtests is projected to a graphic form. Possible recommendations may include further educational testing, examination by other Child Study Center consultants, specific educational programming, special class placement, and/or special school placement.

Speech and Language Evaluation

The Child Study Center speech and language clinician usually conducts his evaluation at the school. Included in the oral examination is the assessment of lips and tongue, tongue mobility, hard and soft palate, and a cursory dental exam. An evaluation is made of the child's ability to repeat in proper sequence and rhythm, and of his voice quality. The child's articulation is evaluated. The Illinois Test of Psycholinguistic Abilities (ITPA) is administered if it has not been previously given.

Recommendations may include referral to the speech and language therapist within the school for remediation, an orthodontic evaluation, an in-depth audiological evaluation, or referral for an ear, nose, and throat study.

Psychiatric Evaluation.

The psychiatric consultant is available for one-half day bi-weekly. His evaluation of the child includes a visit to the school where he observes the child in his classroom setting for one hour. He then interviews the parents at the school for about an hour, after which he confers with the child's teachers to communicate his impressions. The final examination is a Mental Status evaluation which takes place in the doctor's office. This is followed by a conference with the parents.

The written psychiatric report is sent to the Child Study Center with recommendations, which may include suggestions for educational and home management, special school placement, psychiatric therapy, and/or counselling.

Visual Examination

The need for a functional vision examination is discussed with the consultant staff when the Child Study Center teacher has observed symptoms

of visual problems. The teacher might observe unusual appearance of the eyes, erratic eye movements, squinting, frequent blinking, rubbing of the eyes, poor eye-hand coordination skills, postural adaptations, poor performance on those subtests of the Slingerland Tests and the ITPA which are largely visual tasks, or poor performance on the visual screening conducted by the Public Health Department. The child may have complained of headaches, burning or itching eyes, or blurred print. The consultant staff may decide to have the pediatrician examine the child to confirm the need for a functional vision examination.

The Child Study Center nurse talks with the parents to discuss the reasons for the child's referral for a functional vision examination. The Child Study Center has two visual consultants and the parents have a choice of doctors. The nurse explains the functional, as well as the physical, aspects of visual problems, and also discusses the variance in practices between the optometric and ophthalmologic professions. The parents are encouraged to seek the advice of their own physician. If they favor the examination they are asked to sign a permission form, but they are under no obligation to follow the recommendations offered by the visual consultants. All information is shared with the family doctor upon written request.

Interdisciplinary Staffing

When all in-depth diagnostic studies have been completed, the information which has been gathered is presented at a school staff meeting. Because of the limited number of staff, the average in-depth procedure takes from six to ten months. The diagnostic findings are independent judgments which are brought together at this time.

Participants in the meeting are the Child Study Center coordinator, nurse, psychologist, and speech and language clinician, the consulting diagnosticians, the Resource Room teacher, the local school principal, and the teachers who work with the child. The family physician and Public Health nurse are always invited to attend.

The reports of the consultants are reviewed and discussed, and consensus recommendations are made. The best professional judgments of the group are reached as a result of this interdisciplinary exchange. The recommendations are made according to the needs of the child, even if the services are not available at that time. Alternative recommendations are listed in priority order.

Parent Conference

Following the staff meeting, a conference is held with the child's parents. The purpose of the parent conference on in-depth, interdisciplinary diagnostic cases is to share fully the professional clinical findings of the Child Study Center and school staff, and to present their collective judgment on recommended services or placement. As far as possible key part-time clinicians and contracted consultants, such as the pediatrician, psychiatrist, or neurologist, participate in the conference so that parents may have first-hand information on any areas of confusion or concern.

Parents have a right to examine raw data, test results, and individual reports on their child. They are encouraged to take notes, and are advised that on their express written request and/or approval, copies of test reports will be forwarded to the family physician, clinics, agencies, or other clinicians of their choice.

Parents are advised that they do not have to accept or act upon specific findings or recommendations of the Child Study Center staff. They are further advised to consult the Principal and the Supervisor of Special Education in the implementation of the Child Study Center recommendations.

Educational Evaluations

In addition to learning the assessment measures, teaching methods and materials, and behavior management techniques, the teacher in training is carefully supervised in writing educational evaluations for each child who is served. This helps the trainee teacher integrate the information gathered about the child.

For a newly admitted child a preliminary prescription is written shortly after pre-testing is finished. This serves to communicate to the classroom teacher the child's range of intellectual functioning as indicated by the Slosson Intelligence Test, his scores on a sight word list and on a phonetic word list, his skill in oral reading, and his spelling ability. A brief description of the child's math skills as assessed by the KeyMath Diagnostic Arithmetic Test and a narrative of his strengths and weaknesses in visual, auditory, and motor channels as indicated on the Slingerland Tests are included. Also included are additional test data, observations of the child's behavior, initial recommendations for remediation, and suggestions to the classroom teacher for short-term management.

This format helps the Resource Room teacher evaluate the child's individual learning needs and design appropriate grouping of children. A parent conference follows the teacher conference in order to share this information with them.

After the Resource Room teacher has gained a deeper understanding of the child, based on teaching, observations, and further formal and informal assessment, a mid-year report is written. The purpose of this report is to integrate all information related to a child's learning style, his strengths and weaknesses as a learner, and his academic progress. More specific program suggestions are made at this time.

After the post-teaching in May a comprehensive summary is prepared which compares the child's pre/post data. It includes comments on his progress in the Resource Room program and suggestions for appropriate school placement and programming for the year to come. This report is designed to communicate to the child's new teacher(s) appropriate teaching strategies.

There are five major purposes to these written reports:

(1) They help the trainee teacher and Resource Room teacher put together isolated test scores and data about a child in order to see the whole child and plan appropriate remedial intervention.
(2) They help increase the awareness of the classroom teacher of the given child's strengths and weaknesses in the learning process.
(3) They help train the classroom teacher in methods and materials which are appropriate for children with learning disabilities.
(4) These three evaluations are shaped in conferences with all teachers involved with the child and in a separate conference with the parents, so that parents also get the benefit of these reports.
(5) These reports remain in the child's cumulative file to provide a record for future teachers.

Teaching

Child Study Center teachers are trained in the theoretical background and practical application of various teaching methods for such areas as gross motor, visual, auditory, language, mathematics, and reading development. Training in choosing appropriate methods in view of test data and clinical observations is of major importance. [Slide presentation showed possibilities].

Research

Several members of our staff have been involved in researching and studying the data collected in all of the Child Study Center Resource Rooms.

Although Child Study Center has been operating since 1968, systematic collection of pre/post data began in the 1971–72 academic year.

The preliminary research findings on a population sample of ninety-eight learning disabled children in kindergarten through third grade who received Child Study Center Resource Room service between pre- and post-testing show that for six months of Child Study Center teaching, a gain of six months or more in academic skills was found in word recognition, spelling, and arithmetic fundamentals.

These results are most favorable for a population of handicapped children identified as having specific learning disabilities (as evidenced by average or above average intellectual potential and previous failure to perform academically as expected for their level of potential). This preliminary report suggests that learning disabled children who receive diagnostic-prescriptive and remedial services while remaining in the mainstream of education can make significant academic progress.

After another study done by one of the Child Study Center Resource Room teachers, the KeyMath has now replaced the California Arithmetic Test in the pre/post test battery. The study reported . . .

> with the learning disabled population under study the KeyMath is as valid an instrument as the California Arithmetic Test for determining achievement levels. Thus, either test can be used to obtain achievement levels before and after instruction in order to gain a gross measure of the progress made by each student and by each group between test administrations.
>
> If, however, the testing is to be part of an educational evaluation, the KeyMath offers notable advantages over the CAT. The KeyMath tests more of the current mathematics curricula, requires neither reading nor writing, offers a simplified visual presentation, and allows the skilled diagnostician to observe behavior closely during the individual administration.[1]

We hope to do further analysis of our data by treatment group and by grade, and to continue analysis as part of a five-year longitudinal investigation.

Summary

The Child Study Center operates an interdisciplinary diagnostic service for any county pupil (K to 3rd Grade) referred through Pupil Services.

[1] Tinney, Franklin A. "Comparative Analysis of the KeyMath Diagnostic Arithmetic Test and the California Arithmetic Test to Determine Concurrent Validity." Unpublished Master's thesis, University of Maryland, 1973. p. 52.

Such referrals are accepted at any time during the school year and such children are evaluated in depth by the nurse, pediatrician, psychologist, speech and hearing clinician, and special education teachers, as needs indicate.

As a related service of the Child Study Center on approval of the Board of Education in May 1970, the teaching staff of CSC has been deployed to a school-based operation in order to train teachers in diagnostic-prescriptive teaching by serving pupils in their own school without placing them in special classes. The only children eligible for the service in diagnosis and prescriptive teaching are those who have average or better than average intelligence, but who are experiencing difficulty in mastering the basic skills of reading, writing, spelling or arithmetic. (They may be under-achieving in one or more of these skills). A major focus of our effort is to help school personnel identify learning disabilities early in the school experience and to set up remedial programs of instruction to correct the problems and to offset the results of accumulated failure among bright children.

Since this program is essentially a professional training effort, the numbers of children for whom service is now available is limited. In addition, State standards limit the pupil-teacher ratio for Resource Room services. (It is estimated that 15 to 20% of all children in this age group nationally have specific learning disabilities. Without early indentification and remediation of the problems, many bright youngsters will not reach their true intellectual potential.)

In the process of referral and educational evaluation, some children will need more service (diagnostic or remedial) than the local school staff can provide. Therefore, some children in the school program may be referred for in-depth diagnostic study by the interdisciplinary staff.

Most children referred for the school-based service will not require in-depth study and can profit by educational testing done by specialist teachers who then set up and offer appropriate instructional procedures in keeping with individual needs for part of each school day. Should specialist teachers or consulting staff see the need for more extensive evaluation or consultation, parents will be so advised in conference. No services will be offered without express written parental consent—whether for school-based or in-depth diagnostic evaluation. Parents are encouraged to use their own options in this regard.

Diagnostic and prescriptive efforts are carried out in a Child Study Center Resource Room on a part-time, scheduled basis for individualized small group instruction. Groups are limited to no more than six pupils

with any one instructor. Resource Room services require at least forty-five minutes of special instruction each day, five days a week for each child. In some cases, the total time scheduled for a child may be as much as two to three hours per day. This provides what the child needs without requiring assignment to a special class all day with a special teacher. Most (but not all) average or bright children with learning problems respond well to this kind of educational management. Regular teachers are involved in the total instructional management plan, supporting the special efforts (methods, techniques, materials) used in the Resource Room.

II. Two Principals Describe the Program in Their Schools

1. First Year Implementation of the Child Study Program in the Clarksville Elementary School

Edward E. Alexander
Principal
Clarksville Elementary School

Program Implementation in the Pilot Schools

We often say that the climate of a school is primarily determined by the principal. Certainly, the educational leadership and spokesmanship is initiated there; the acceptance of handicapped children stems from the principal's attitude toward these boys and girls.

Much of the leadership responsibility for innovative programs is assigned to or accepted by principals within their own schools. Many principals recognize and value leadership opportunities available through developing unique innovative programs.

Any *experienced* person knows that it is not easy to change schools. He also knows that there is no such thing as effective instant innovation.

Sensing need for change has become an important function of the instructional leader. Procedures must be established by which problems as viewed by parents, students, and teachers can systematically be identified. The principal should communicate with them consistently.

Communicating presents problems. The administrator must be the school's chief interpreter, its chief communicator. Communicating is difficult, it is complex, it is a job that requires planning and expertise; but communication, both within the school and without, is the key to success.

American public education is essentially a conservative enterprise. Teachers are a relatively conservative group within the population, and the citizenry seems to react more nervously to changes in school practices than to many other kinds of social change. Any effort at major reorganization or improvement in the schools must therefore be done with considerable care.

There were a number of ways I could have presented the Child Study Program to our staff. One way could have been through reports on the discussions of Child Study Center programs (CSC) which took place in administrative staff meetings. Another could have been to interest the steer-

ing committee or similar group concerned with the determination of agenda for the local in-service program. Some staffs are close-knit and informal and may respond to ideas thrown into regular meetings or even the informal gatherings of teachers during the working day. These and other ways might have been used to excite enough interest so that the staff would agree to take steps to increase its understanding of the program and how it works. I chose to report on discussions of Child Study Center programs held during administrative staff meetings.

Sometimes it is possible for members of the staff to visit schools where a program is in operation. Actually the value of such visits is more likely to be psychological than informational.

Ideally, the in-service professional program for the staff ought to be geared in some way to the school system's parent-education and public-relations programs. All program changes are dependent upon the teaching staff; their support, interest, and cooperation is needed. They should be consulted and directly involved in the planning, implementation, and evaluation of all curricular programs.

In order to facilitate the implementation of the Child Study Center program into the Clarksville Elementary School educational milieu, certain preliminary considerations were paramount.

A. Criteria for selection as a Pilot School.
B. The number of people involved.
C. What personnel would be involved?
D. Would any physical changes be necessary?
E. Are any administrative changes necessary?
F. Will extra staff be needed?
G. Will any type of in-service activity be needed?
H. How will parents be informed?

Steps and Needs in the Selection Process

1. Principal's request
2. Minimum space
3. Available teacher to be trained
4. Trainee's willingness to meet special education certification requirements
5. Final selection

Within the framework of the criteria for selection as a Pilot School, it became necessary to convince the faculty that such a program was necessary to the best interests of the children.

Several faculty meetings were held to familiarize the staff with test results and performance results showing rather glaring discrepancies between ability levels and performance levels of many average and above average children in the school.

Dr. Justison was brought in for an in-service program. A film on learning disabilities was shown and discussed. Other members of the Child Study Center team were brought in as consultants to clarify the program, its purposes, and approaches. Stress was placed on the fact that total cooperation between CSC and our faculty was vital if the program was to succeed.

Also secured were the services of other principals in the system whose schools were currently operating with the program. Their experiences, comments and recommendations proved to be extremely helpful and enlightening. As a result, the initial and subsequent responses of school personnel were most enthusiastic.

Number of People Involved

To implement the Child Study Center program, thirty-five people regularly assigned to the school were utilized, plus the full-time interdisciplinary staff and part-time consultants: the principal, 21 teachers, 2 secretaries, 4 Child Study Center people, 7 special area teachers including those dealing with specific learning disibilities, educable mentally retarded students, music, instrumental music, and speech therapy.

Physical Changes

In order for the Child Study Center program to enter any Howard County public school, a minimum of half a classroom or other comparable space must be available to the on-site Child Study Center team. In the case of the Clarksville Elementary School, some problems were encountered since all classrooms were in use and all other available space was being utilized by the special teachers assigned.

Since the trend in special education is toward main-streaming exceptional children, I consulted the supervisor of special education, the teacher of the educable mentally retarded (EMR), and the teacher of children with specific learning disabilities (SLD) and decided to utilize one room, the EMR room, as a resource room for both the EMR children and the SLD children. This room was partitioned in such a manner as to provide two quasi-separate teaching stations. This left the classroom previously utilized for teaching the learning disabled available for use by the Child Study Center team. This

particular classroom was chosen because of its close proximity to the office, which affords the CSC personnel easy access to telephones and secretarial assistance.

Extra Staff Needs

A staff member who was willing and capable of being trained in diagnostic and prescriptive methods was needed, and the teacher of the specific learning disability class was selected. The Supervisor of Special Education was responsible for assigning the trainer teacher and the teacher aide. This necessitated the hiring of a new SLD teacher.

In-Service Activity

As a prelude to actually putting the program into operation, the interdisciplinary CSC team conducted a workshop to orient people new to the program. Since the program would necessitate the *direct* involvement of the principal, the full-time interdisciplinary staff, the training personnel, the teacher of the learning disabled, and all teachers K–3, we hoped that all of these people would be able to participate. A slash in funds dictated changes. Principal, trainee teacher, trainer, trainee aide, trainer aide, SLD teacher, reading specialist, and one teacher from each level K–3 were enrolled in the workshop. The workshop centered around an orientation to procedures, policies, and referrals and interpretation of test results.

Public Relations

The school sent a letter explaining the program and its implementation to all Clarksville Elementary School parents at the end of the 1971–72 school year. At the first PTA meeting, a film on learning disabilities was shown to the parents, followed by a question and answer session conducted by a member of the interdisciplinary staff of the CSC team. Then, a member of the Clarksville CSC team gave a brief overview of the program and its aims. Although approval of the community did not have to be obtained in order to get the CSC program, it was most desirable to convince the community to accept and approve of the program.

How CSC has Changed This Principal's Expectancies of Classroom Teachers

I would expect teachers to become aware of and more sensitive to not only the learning strengths and weaknesses of learning disabled children

but all other children as well. It is incumbent upon the principal and all staff members to continue to update their backgrounds for dealing with all sorts of exceptional children. I don't profess to be an expert in dealing with or administering a program for the learning disabled, but thanks to the children, my staff, and the total CSC team, I am learning more and more every day, and developing an expertise I could not get in any other way.

2. Influence of the Child Study Center on Elementary School Programming

Shirley R. Kellam
Principal
Atholton Elementary School

The Child Study Center program at Atholton Elementary School has greatly influenced the children, the staff, and the curriculum, and has greatly increased our understanding of the individual child and his modalities of learning. In the past four years, it can be said that the overflow from the Center to the school has been phenomenal. This is due to four important factors: 1) the success of the Child Study Center program during its first two years; 2) its acceptance by the staff and parents; 3) the willingness of the teachers to cooperate and learn from those persons who have expertise in teaching children with learning disabilities; and 4) the willingness of the resource personnel connected with Child Study Center to share this expertise. Their supportive services have benefited staff, children, and parents.

The overflow has displayed itself in a multitude of ways; however, only the most obvious can be noted at this time. After we faced the realization that there are quite a few children who are unable to learn under ordinary school instruction, we had to face the realization that a minimal number of children could be given service through the resource room. We had to make other provisions for those with less severe disabilities. We learned from the Child Study Center staff that all of these boys and girls can experience academic success. Thus, there was first a change in attitudes; then came changes in operations and practices.

The most significant outcome in the early stages of our training was the development of a greater proficiency in observation techniques, most particularly with the teachers of primary children—these more than others because of the closer working relationships between the Child Study Center and primary-aged boys and girls. We are now better able to evaluate the individual's performance and behavior because of improved classroom techniques due to specific guidelines developed by Child Study Center. We now keenly observe all children.

Certainly our knowledge of learning disabilities has been increased because the principal and classroom teachers participate in all parent conferences, diagnostic and evaluative sessions. Also our teacher competencies

have been extended to our regular teachers by the diffusion of suggested diagnostic and remedial techniques and materials offered by the Child Study Center interdisciplinary team and by the resource teacher. We feel we are nurturing a cadre of teachers who are becoming proficient in early identification, diagnosis, and management of children with learning disabilities.

The association has also provided the staff with a greater range of knowledge concerning testing, test analysis, and evaluation. We have learned to interpret the specialist's diagnosis, implement prescriptions within the classroom, and better understand individual children.

Practical suggestions for specific deficit areas have been shared in conferences with regular teachers in which we discussed mild learning problems of children not referred to or receiving services in the resource room.

If the breadth of growth at Atholton stopped at this overflow point, it could be said that invaluable services were being offered to our staff and population. However, it became obvious that we could now extend ourselves even farther. Two years after the inception of Child Study Center at Atholton, we felt that we were ready to differentiate our curriculum. Since the Child Study Center can provide for only approximately 20 children, we felt it necessary to reach more children who appeared to be at "high risk" for learning to read, write, spell and compute. These children were identified by teacher observations, judgment and evaluation, kindergarten experience, testing, parent conferences, and past experiences. Our new-found knowledge and high intetrest prompted a first grade teacher who had no training in special education to request such a group of children. By working closely with the Child Study Center staff, this teacher spent her summer preparing herself for a variety of different curricular experiences. Reading was taught by a multi-sensory approach; she incorporated exercises in speech development into her program; she provided auditory and visual memory training; and she used the same mathematics program as the Resource Room Specialist. In addition, she had to create a classroom environment that was structured and personal, as well as one that would give children the feeling of constant success, while she was employing techniques to modify children's behavior.

It is highly important to point out that this class, and the other curriculum adjustments we have made, could not have been undertaken in the first year or two that the Child Study Center Program was in existence. We needed the support and understanding of staff and parents. It had to be understood that the children involved were average to above average in

intelligence and were extended educational opportunities the same as all other first graders. Only the techniques, methods and some materials differed. There were few parents who even questioned their child's placement. Conferences satisfied any apprehensions they may have harbored. In fact, several children were transferred into this class as late as October upon parental request or teacher referral.

During this year, two other special classes were being offered by first and second grade teachers to accommodate "high risk" children in the area of mathematics.

This year we are giving service to even more children by differentiating programs in the second and third grade rooms in math, reading, and writing. We have adopted the same cursive writing mode that Child Study Center utilizes, and we are beginning cursive writing before third grade.

The Physical Education teacher has assumed the responsibility for three classes a week in adaptive physical education activities to help those children who require additional motor development. This year he carefully screened all first grade children and organized his classes to accommodate their needs.

Kindergarten and primary teachers are being trained to utilize multisensory techniques, to provide visual-motor training in the classroom, to search constantly for methods of instruction that will fit a child's needs, rather than trying to make the child fit a particular method or curriculum.

We all know that a school program of instruction must be flexible enough to permit a continuing search for new teaching methods, and the administrative leadership in the schools must not only allow but encourage experimentation both with identification procedures and with adjustable methods of instruction.

Naturally the innovations and the feeling of success we have had at Atholton would not have occurred without a staff that is attuned to the learning disabled child, without teachers who are willing to add to their knowledge and increase their preparation time, without teachers who have a genuine love for kids and realize the importance of building success into the child's school environment and increasing his self-worth, and most importantly, without a Child Study Center staff who literally taught us all we know. It has been truly a whole-school endeavor.

The Mainstream Approach for the SLD Child: A Public School Model

Dorothy Ley and *Richard Metteer*

Wayne-Carroll Board of Education
Wayne, Nebraska

Observers on the educational scene have estimated that it takes at least 40 years for research to be translated into classroom teaching techniques. That estimate has proved painfully true in the area of specific language disability. Eight generations of K-3 children have had to fight battles against misunderstanding and mistaken identity since Orton's pioneer work.

Five years ago, determined to translate research into practice, the Wayne-Carroll School system began a search for an economical and effective way to bring appropriate instruction to the child with specific language disability. In two years of experimentation the staff recognized four constraints which had undoubtedly contributed to the slow pace with which research was being translated into efficient, effective SLD programs easily replicated in the public schools.

The four stumbling blocks encountered were: (1) with the tight budgets available, how to serve the large numbers of children needing help; (2) how to see and serve the SLD child as a complex human being rather than as "a language problem"; (3) how to convince the child, his teachers, and his parents that he could succeed; (4) how to cope with unique learning styles.

The sheer numbers needing help becomes a constraint to an effective program in most public schools because at the outset schools underestimate the number of children needing help. Inevitably an evergrowing waiting list brings frustration to children, parents, and professional staff. Authorities outside the classroom may put the ratio of SLD children at one in twenty or twenty-five, but teachers in the classroom will tell you the percentage is much higher. On the basis of its research the Wayne staff has concluded that between 15–20 percent of all children have language problems which make conventional teaching techniques ineffective. The differing learning styles of this 15–25 percent demand teaching techniques far different from

the basic basal reader approach which is, alas, the sole approach still taught in many teacher-preparation colleges.

It seemed obvious to the Wayne staff that if all children needing help were to be served it could not be done by a few highly salaried experts. The classroom teacher must be retrained in teaching techniques geared to the unique learning styles of the child with language disability. It was on that basis that Project Success for the SLD Child was created. It began as a Title III-funded project in 1971 in West Elementary School, grades 1–4 and has been expanded now to kindergarten through ninth grade. Inherent within the project was a unique classroom-based delivery system in which the trained language therapist first demonstrated for the target classroom teacher, then team-taught with her, and finally withdrew into a supportive consultant role. The modified Joplin plan, with every child moving to a learning environment geared to his learning style, is used for the language arts block. Since every child moves, there is no "different" stigma attached to the child with specific language disability problems.

The language arts program in the kindergarten emphasizes systematic training in auditory skills in five areas: (1) discrimination; (2) closure; (3) figure-ground; (4) comprehension; (5) memory. Project personnel have become more and more convinced that many of the problems which surface later in reading have their origin back in faulty development of auditory receptive and expressive language. A preventive program in which the child is never allowed to experience failure is the most satisfactory answer to the third stumbling block listed above. At the end of kindergarten the children are observed carefully and also given a test battery to determine the kind of language arts instruction appropriate for them. Another month of careful observation occurs in the fall and those who would benefit most from techniques used in Project Success are then assigned to the project.

In the elementary grades a systematic phonics approach with multisensory input is central to the teaching of decoding and encoding skills in the SLD program. Further training is given in the five auditory receptive areas, and auditory expressive skills are also worked with directly. Syntax and semantics are taught through a pictorial framework.[1] Comprehension skills are also taught directly.

The student who is the target of Project Success has been called the

[1] *The Schmerler Instructional Sequence and Strategies* published by EMC Corporation, St. Paul, Minn., 55101, explains this pictorial system created by Florence Schmerler.

Specific Language Disability student not because language is the only area in which the youngster's difficulty manifests itself but because his characteristic inability to read, write, and spell with facility has a devastating effect upon his progress in almost all subjects of the curriculum. Though this language problem is crucial and given the highest priority, concentration upon the child as simply "a language problem" is a mistake.

The SLD child is not just a "reading case"; neither is he just a "motor problem" or a "math disaster." He is a human being, and he needs understanding as a whole person from *all* who deal with him, not just from a remedial reading teacher or a resource teacher who, at best, sees the child one hour a day—and sometimes far less. Unless the public schools see the necessity of serving the whole child and giving him the support and understanding he needs in the entire school setting and at home, programs for the SLD child will continue to be patchwork affairs.

To develop the full potential of this child as an efficient and effective human being, three major program components were developed along with the language arts program in Project Success: motor perception, curriculum modification, and parent demonstration-participation workshops.

The second component, motor perception training, is aimed at helping the SLD child understand and control his own body and thus become more efficient in his movements. A child's ego begins with his physical self and the self-confidence and feelings of self-worth generated in five areas of motor perception are a valuable asset when he tackles a tough academic task. The five areas of training set up in the form of stations are development and application of muscular strength, dynamic balance, body awareness, spatial awareness and temporal awareness. Success is built into the format of the program so that children who have experienced failure and frustration will, through their motor perception training, begin to realize, "I can!"

Daily process evaluation is achieved through the use of hierarchy of skills charts in both the language and motor areas. The child or his instructor records his success on his own hierarchy chart so that both know which skills have been mastered and which remain to be presented and practiced.

In the language arts program further individualization is achieved through the use of learning stations. When a child's hierarchy chart shows he is not progressing in a particular area, he is given reinforcement in that skill during the time set aside for individual learning stations. Volunteer

aides are an indispensible factor in the individualization of instruction in all three areas—language, motor perception and curriculum modification.

A word should be added about the contribution of multisensory techniques to individualization. Though *group instruction* of 6–9 students may be taking place around a kidney-shaped table, *individualized learning* is made possible by multisensory techniques. The multisensory approach combining auditory, visual, tactile, and kinesthetic input allows the child to unconsciously select the mode(s) best suited to his learning style. Teachers encourage this unconscious selection to become a *conscious* technique as the child is helped to analyze how he learns best.

Curriculum modification, the third component, is a translation of individual needs into a program geared to the unique learning style of the SLD child, a program which will keep the child functioning successfully within the mainstream of education in subjects such as math, science, and social studies. The curriculum modifier helps the classroom teacher to create a learning environment which will allow the child to capitalize on strong modalities in the demand situations of the content subjects while weak modalities are being strengthened in the language arts and motor perception programs.

The following principles are emphasized:

(1) Break down the task—the simple before the complex.
(2) Begin with the concrete before going to the semi-abstract and the abstract.
(3) Utilize a multisensory approach to find the way a child learns best. The most effective teaching is usually body-oriented.
(4) Begin with the known and with reality.
(5) Provide a framework within which to organize information and to facilitate retrieval of it.

The fourth component is the parent demonstration-participation workshops. Bi-monthly workshops are held with emphasis on fun activities parents can share with their children to strengthen their learning pathways and build a sturdy self image. When parents and teachers study together and exchange ideas, children benefit.

Visitors to Project Success frequently comment on the happy, self-disciplined attitude of the children. Parents, too, are happy with their children's success. Occasionally it is difficult to convince parents, not that a child should go into the program, but that he is ready to go out of it! Said one mother who was told that if upcoming tests supported the judgment of the staff her son would go into conventional language arts instruc-

tion, "I'll tell him to flunk. That program is the greatest thing that ever happened to him."

Project Success was one of the few projects validated on the basis of innovativeness and cost effectiveness before the completion of its second year of operation. It was recognized in 1973 as one of the top seven exemplary Title III projects in the nation. In the first two years over 40 percent of the children in the project "graduated" to conventional instruction with no followup special support needed. Readers interested in the full evaluation reports may write to the project office. Manuals are also available in the four component areas. Inquiries should be addressed to Richard Metteer, Project Director, West Elementary School, 612 West Fourth, Wayne, Nebraska 68787.

Specific Language Disability in Secondary Schools

Julia R. Herbert

Specific Language Disability Coordinator
Southern Area Administrative Office
Prince George's County Public Schools, Maryland

This paper was presented at the 24th Annual Conference of The Orton Society, Baltimore, 1974.

In Prince George's County, Maryland, we have been seeking new directions in education for students whose first educational problem is related to their difficulties in learning the basic skills of reading, writing, and spelling. The Specific Language Disability program, now from kindergarten through twelfth grade, is one such approach.

[Here the author describes in some detail the difficulties which beset the individual of any age who can be categorized as having a specific language disability of developmental or constitutional origin. This story, needed in the conference presentation, is, however, the perennial one well-known to readers of this journal and well-told elsewhere. For reasons of space we omit it here and go on to the report of the program so successfully being carried out in part of this public school system.—Ed.]

We have been speaking of some of the observable symbol-related difficulties of these secondary students. Sometimes these observations suggest the need for psychological and neurological examinations. Generally speaking, however, in our Prince George's County Public School program we have received adequate information from evaluation—a writing sample, a spelling test, an informal reading inventory, and a careful study of the students' cumulative records.

The secondary program for specific language disability students is addressed to the following:

1. Development of basic skills.
2. Adaptation of curriculum with as little dilution as possible.
3. Improvement of self-concept.

This program has varied at the secondary level according to each

school's needs and resources. I will describe a more or less typical junior high program design.

At each grade level the first class of the day for about twenty specific language disability students is regularly devoted to the development of basic language skills. A specific sequence is followed which begins with the letters and sounds of the alphabet. The most disabled students will have one more session of one-to-one or small group help. This additional hour could be conducted by a trained parent volunteer, a resource person, or, as in one school, by volunteers from a nearby Naval Research Center, or the principal. Sometimes this additional hour may be spent in a typing class where the material is specifically designed, not only to compensate for poor handwriting, but also to reinforce spelling and reading.

In one high school, a specific language disability teacher is assigned one hour daily for each of several groups of from two to ten students. These classes will be working on the language arts skills of reading, writing and spelling. This teacher may spend an additional hour with some members of her classes, helping them in content subjects in a tutorial capacity.

From the beginning of our program, we have followed the advice of Mrs. Diana King, Director of the Kildonan School, and Camp Dunnabeck—our students write at least half of the time that we work with them. Frequent dictations provide opportunities for handwriting practice, for application of spelling rules, reinforcement of organization and attention to detail, and self-monitoring.

We have been impressed with results of "reading with a pencil," reported by Mrs. Alice Ansara ("Salvaging Potential," *Bulletin of the Orton Society*, Volume XXII, 1972), and we have our students use this technique.

We teach long vowel conditions precisely according to Gillingham and Stillman, and we get good results with this method.

Many of our students have difficulty in academic listening situations. Sometimes there is simply the problem of recording written notes. The problem, however, is usually more complex involving sequencing, auditory attention and discrimination, general disorganization, and memory. We have found "one-word-notes" a helpful technique for these students. A student listens to a short tape recording calculated to interest him. (There is one on bats and caves which is almost surefire for seventh grade boys.) We explain to the student that the object is to help him understand and remember better. He is asked to write any key word he hears as the tape progresses. As soon as the tape ends, he reviews his "one-word-notes." At this time

he clarifies the notes by adding any additional information he recalls. In a step by step approach, he would turn each word into a phrase, each phrase into a sentence, and finally he would write a paragraph. Eventually, he would eliminate steps of rewriting his notes and more directly from his first notes (which may by then be phrases) to a paragraph.

Continued attention is essential to getting the first words on paper. Reinforcement of memory and sequence is implicit as he proceeds from step to step. The organization of the material he has heard is built into his own notes. He has the opportunity of practicing this organization as he writes and rewrites according to the pattern of the material. As he writes, he reinforces his memory of ideas and facts and he can prepare for tests. Self-monitoring is practiced as the student moves from notes to completed reports. One-word-notes reveal spelling needs. They can coordinate well with dictations, and have been productive in satisfying the needs of our students.

Adapted, undiluted curriculum has depended on subject teachers' understandings of the educational problems of these students. There must be some revision of expectations regarding materials, presentation, and testing procedures. Teachers' acceptance of "Talking Books" is an example, for book reports allow these boys to encounter the material that other secondary students read. Their book reports may be taped instead of written. The Library of Congress and the Society for the Blind provide recorded materials, including fiction, magazines, newspapers, and reference books. Sometimes they record textbooks. In Prince Georges County, parents and other students have made such recordings, too.

Audio-visual materials—films, filmstrips, television and radio—are excellent resources for courses in history, social studies and government.

We are developing ways of working with secondary age specific language disability students who have problems in mathematics. Presently we are borrowing from the primary language drill procedures so well delineated in Beth Slingerland's manual of method, *A Multi-sensory Approach to Language Arts for Specific Language Disability Children*. A class of secondary students recites the "times tables" in unison. They read them from charts, at the same time writing in the air. They copy the tables. They write them from dictation. Sometimes they work this way with a tape-recorded guide. Secondary mathematics teachers work with these students on organization of their papers and on directionality. Instructions for work are given step by step in both oral and written form. Sample problem charts for self-monitoring

are visible in the classroom. These charts identify parts of a mathematical process and indicate its steps.

Concern for improved self-concept is an underlying dynamic of the program. We hope to meet many such needs through respect for individual talents and achievements. We want to enhance the boys' views of themselves, and other people's views of them, by extending their natural talents. We also believe that along with discovering what they can already do, they must find swift success where they failed in the past. We do not accept the poor behavior that is sometimes presented. The students are expected to work in school as well as they are able, with as much help as we can provide. We have expectations for these students. They are learners, and secondary public school responsibilities are clear in the light of the natural resource that any learner represents. There is mounting concern over the high percentage of juvenile delinquents who can't read, write, or spell. In the long run, appropriate primary teaching should dramatically reduce the number of disabled students who enter secondary classes. Unfortunately, that is in the future. I have been acquainted recently with a large junior high school where there are three classes, approximately 90 students in seventh grade, who are primary readers. At such a late date, intensive skill development will help many of these youngsters. But just as certainly it will not reduce by many the ranks of those who will continue to need the same kind of multi-level assistance in senior high school.

Addendum

A JUNIOR HIGH SCHOOL SLD PROGRAM: ADMINISTRATIVE VIEWS

Frank Facinoli, Principal
Oxon Hill Junior High School
Oxon Hill, Maryland

The Oxon Hill Junior High program grew from our school's need to teach a large number of its students how to read, write and spell. These particular students had the following characteristics:

1) About 80 percent of them were boys. They could read, write and spell (or a combination of these) only at primary levels.
2) Tests or behavior showed their intelligence to be at least average.
3) They usually had several years of extra help in reading.

4) Their self-esteem was low. They told us they were "dummies."
5) They had histories of poor adjustment or problems of behavior.
6) They wanted *to try* to read.

By the spring of each year, failure had increasingly frustrated these students. Often they were truant or delinquent. Most of them were serious problems to their families, to the school, and to themselves.

In spite of vigorous and imaginative efforts by their classroom and reading teachers, and their own cooperation, their reading actually improved very little.

We wanted to develop ways of teaching language skills to junior high school students which would help them cope with their confusions and frustrations.

My role was to accept the program, and use my administrative experience to make it work. We needed our elementary feeder schools' help. We needed support in our central staff office. We needed approval from the Maryland State Department of Education for a workshop in which we could train teachers.

I did not have to do any arm-twisting at that time. Our feeder schools were administered by cooperative educators. Dr. Gilbert Schiffman was a member in our central office staff, as Director of Instruction. We launched a small local operation intended to teach our local children to read, write, and spell, with the encouragement of Dr. Schiffman. We called it the Oxon Hill Project.

A workshop on methods was authorized by the Maryland Board of Education to help prepare teachers to work in the Oxon Hill Project. Teachers and parents from various locations throughout the county attended the workshop. Registration exceeded our expectations from the start. All fees for this workshop have been assumed by Prince George's County Board of Education.

There have been many changes in our county public schools, as in other school systems—changes in staff personnel, changes in student population, and changes in community awareness. These changes have affected us. If the changes were not always favorable to our project, they were always challenging and I like a challenge. I'm happy to say that the Oxon Hill Project became a county program. When parents and teachers feel good about education in their community, then the right needs are being met.

We could not have succeeded to the extent that we have succeeded if it had not been for our parent-volunteers, parent groups who helped us

convince other parents, students and our own professional colleagues that a good percentage of our student population needed a Specific Language Disability program. In this we are not unique. It is time for the public schools throughout the country to "bite the bullet" and institute Specific Language Disability programs in schools, and it can be done if we let our communities know that we have a tested, effective program ready for use.

Controversy surrounds us on all sides throughout the country; reading people, medical people, and educators in all areas are dragging their feet in the public schools. After working six years with this simple approach in the Specific Language Disability area of reading, and after listening to professionals throughout the country argue against this method, I think the arguments often contain too much professional jealousy and pettiness.

The cost of this program in Prince Georges County, six years after its beginning, will be $117,000 for the 1974–75 school year. This cost is spread over approximately thirteen schools and 1,000 children, which comes to about $117 per student, above the regular cost of public education in Prince Georges County. Because the program has been effective, the Prince Georges County Board of Education has appropriated this money in order that it may be extended throughout the system.

We have approximately 150,000 students in Prince Georges County. If 10 percent of that school population have language learning problems, then it is obvious we have a long way to go before we reach every such student, but I am confident the professionals, the Board of Education, and the parents are ready for us to have a Specific Language Disability program throughout the county.

If it can be done in our county, then this will demonstrate that it can someday be done in every public school system throughout our country.

Adolescents: It's Never Too Late to Learn

Jane McClelland

Language Consultant
New London, Connecticut

This article was adapted from a paper presented at the 24th Annual Conference of the Orton Society, Baltimore, Maryland, 1973.

Many people are firmly convinced that once a student who has a reading or spelling problem reaches adolescence there is little hope that he can overcome the problem. Even educators (who should know better) feel that the die is cast, and that such students should be passed along from grade to grade as quickly and as quietly as possible.

However, some of these students refuse to "go quietly" and cause a good deal of trouble along the way. They change from eager-to-please, cooperative young children, to frustrated, don't-give-a-damn adolescents (Table 1). They develop an impenetrable façade and a strong defense mechanism; they literally "turn off and (try to) drop out."

While we educators and parents try not to let them drop out, neither do we solve their difficulties by adequate teaching. Instead, we encourage them to blunder along, hoping that any day they may see some light at the end of the tunnel. Our own bafflement meanwhile leads us to misinterpret the student's motives and actions.

News stories often focus on the problem. In San Francisco, we read in the *N.Y. Times*, "Poor Reader Sues Coast Educators—Boy Asks $ Million Damages From California." When Peter Doe received his diploma in January, 1972, his reading level made him "unqualified for employment other than the most demeaning, unskilled, low-paid labor." This 18 year old boy comes from a middle-class family. He attended school regularly, caused no disciplinary problems and received his high school diploma on schedule.

In Seattle, we read in the *Seattle Post Intelligencer*, "Drop-out Now a Grad-out." The long-time director of basic skills for the school district admits that "quite a few Seattle students are graduating these days without minimal skills needed to survive." He is also quoted as saying that "about 30 percent of the graduates aren't really reaching an expected level of achievement." The gist of the article is that "not as many students are

		GRADE 7							GRADE 9
Periods:		*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*	*Av.*	*Average*
Subjects	*Periods per week*								
Mathematics	5	B	B	B	B	B	B	B	D
English	5	C	C	C	C	C	C	C	F
History	3	C	C	C	B	B	B	C	D
Science	5	C	C	C	C	C	C	C	D
Spanish	—	C	D	D	B	B	D	C	F
Latin	—	—	A	—	—	—	—	—	
Sacred Studies	2	B	C	D	F	B	D	C	F
Phys. Educ.	3	B	B	C	B	B	B	B	C
Conduct		C	C	C	C	C	C	C	D

Table 1. The student whose grades appear above was an "A" student in elementary school. Specific language disability was dignosed following the student's theft of a car toward the end of his ninth grade. He refused tutorial help, is unable to keep a job, and is still drifting aimlessly at age twenty-four.

dropping out these days," but are remaining in school where they are still untaught and this causes some embarrassment, to say the least.

An Associated Press report in another paper headlines "Illiterate Youth Sent to Jail to Learn," and tells of a teen-age automobile thief who got as far as the ninth grade without learning how to read or write. He was sentenced to prison by a Brooklyn judge, who called the boy's illiteracy "a shocking situation."

These are some of the news-making cases; there are many more students like them. The less spectacularly newsworthy students are the ones we see in our schools, Scout troops, Sunday school classes, youth groups and neighborhoods.

They are predominantly male; four times as many males as females have reading and spelling problems. They have normal or correctable vision and hearing. (The blind and the deaf receive special help from the beginning of school.) They have normal intelligence. (The retarded have special classes.) Their attitude toward academic endeavors such as English, literature, foreign languages, history, etc. is apathetic but they often show great enthusiasm for related projects of the show-and-tell variety. In self-defense they may be dishonest, cheating on tests, taking the teachers' answer books,

copying other students' homework and making up elaborate excuses for not doing assigned work.

These students are often accused of not trying ("the outstanding work done on a science project indicates that they are capable of quality work when they want to do it"), of being lazy ("anyone who can spend three weeks working on a medieval castle for a history project could certainly get around to completing a one-page composition") and they are also accused of not paying attention (they follow directions poorly so that the work they manage to hand in is frequently incorrect).

Parents are usually on the defensive, saying, "I couldn't read very well either, but I got along all right," "There's nothing wrong with my kid," "He needs to be motivated," "He didn't have any trouble last year but that teacher understood him," "He's a good kid, he just hasn't found himself yet," or "If he'd spend half the time on the books that he spends on that motorcycle, he could be an 'A' student," and scores of similar statements.

The typical language disability student, therefore, is a boy too often thought of as physically and mentally normal but disinterested, devious, lazy and inattentive, whose parents are vainly trying to explain his behavior. In reality, this student, male or female, started out as a normal, healthy, happy child with a strong desire to achieve in school. It is often difficult to pinpoint the exact time of the first frustration with language; it may have taken place during the first week of school, or even earlier, and not become apparent for some time, even for years.

If we examine the records from the beginning, we can see trouble developing. But early reports, though revealing, are not readily available, sometimes making it necessary to identify these young people at adolescence. By then time is running out for them and it is important for us to move rapidly and positively without waiting for elaborate testing.

Diagnostic Information

Writing gives the most visible indication of language disability, as errors in spelling, grammar, developing a logical sequence of thought, and in penmanship, show starkly. The casual writing of notes relating to non-academic activities is usually unguarded and is therefore most significant (Fig. 1).

143

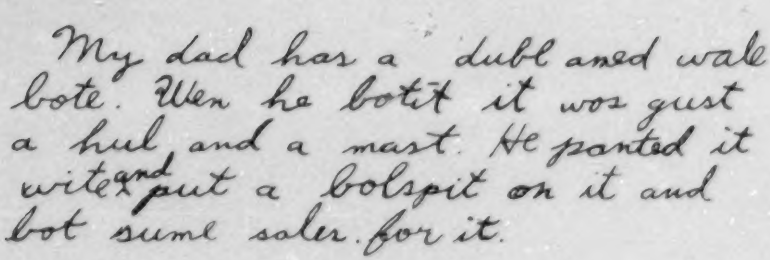

My dad has a dubl aned wale
bote. Wen he botit it wos gust
a hul and a mast. He panted it
wite and put a bolspit on it and
bot sume saler. for it.

Figure 1.

In the classroom, a teacher may assign a brief written exercise. Those which "lead" the students' thinking by requiring answers to specific questions or the paraphrasing of statements are more helpful than exercises that are less structured. In response to "You may write about anything you wish," the teacher may have little to evaluate because the student with difficulties in language will usually have little to offer in the form of written expression. There is merit in having each member of the class do the same exercise, permitting comparison of abilities and "ranking" the class for individualized teaching. When asked to explain the phrase, "Dig a well before you are thirsty," (Fig. 2) the student's interpretation was very literal. However, in the second part of the sentence he demonstrated a little more abstract thought with the idea of wanting something just because one sees it. His thinking about "Smooth seas make poor sailors" is unimaginative but clear.

Reversals

We know that language disability students are prone to reversals of various types. These include: 1) reversals in which similarly formed letters are confused, as reading and writing *b*'s for *d*'s, *p*'s for *q*'s, *n*'s for *u*'s; 2) reversals in which the order of letters is transposed as in reading or writing *was* for *saw*, *on* for *no*, *preform* for *perform*, *aminal* for *animal*, *heigth* for *height*; and 3) reversal of direction which shows in left-right, up-down, north-south types of confusion, as well as difficulty in following directions in proper sequence.

The fact that this student was unable to read cursive writing and had

Test Sentence:	Dig a well before you're thirsty. (*Written by teacher*) Dig a well before you're thirsty. (*Printed by teacher*)
Student response, (printed):	If you don't have a well, you can't be thirsty because you don't have watter, but if you dig a well you will be thirsty for shuer.
Test Sentence:	Smooth seas make poor sailors. (*Written by teacher*) Smooth seas make poor sailors. (*Printed by teacher*)
Student response, (printed):	Smooth sea maks a man think it is all eazy going.
Test Sentence:	The Marines stormed ashore. (*Written by teacher*) The Marines stormed ashore. (*Printed by teacher*)
Student response, (printed):	The marines stormed ashore on the islane of Booga-Booga, ankilled all the bad gays. When it was allover the trops found out that they raded thar camp on the island of Agoob-Agoob.

Figure 2. The ninth-grade student whose work is shown above was described by his teacher as "a lazy boy, an average student who could do better if he tried." The teacher's material had to be printed because he was unable to read cursive writing.

to request that the sentences be printed, and that his spelling and penmanship were very poor, indicated more clearly than a standardized test that he had a serious language problem (Fig. 2).

Spelling

The usual method for teaching spelling is to assign a group of words, usually twenty or twenty-five, to be learned by the end of the week. In some instances a pre-test is given during the week and those who score highly enough on this are excused from the Friday test. Many parents can

speak for the trying Thursday night cram sessions, and the tension which builds as their youngster struggles to memorize a list of words. Somehow the student manages to learn them after repeated trips back to his or her room to study, and the next day comes home flushed with the success of having passed the test. No one questions the fact that by Saturday morning the words have already begun to slip away.

The "A" speller of elementary school often evokes strong criticism from teachers in junior high and high school. The student is penalized for poor spelling, but no effort is made to teach spelling academically. No matter how many times words are marked incorrect and papers are returned with the teachers' fatuous comment, "You're expected to know these words by this time. Learn them!" the spelling doesn't improve. Teachers finally give up concerning themselves with spelling, and speak instead of "creative writing" and "original thought," while putting ideas of functional illiteracy from their minds.

The same techniques of spelling by phonics and rules which should be used to teach students in the lower grades apply to the older student. One change is helpful, however—that of substituting nonsense syllables for real words. By the time students have been in school a number of years, exposure to some words has allowed them to learn them individually without understanding the phonetic principle or the rule involved, although this type of knowledge would enable them to read and spell all words of similar construction.

In Table 2 a list of nonsense syllables is used to teach the sound of the letter *c* which is pronounced *s* when it is followed by an *e*, *i* or *y*. When

When *c* is followed by *e*, *i* or *y* its sound is (s).
When *c* is followed by other letters its sound is (k).

cip	cyb	cel	cif
com	caft	clum	cuce
cibe	oce	cice	mece
tuce	tace	loce	tece
cepe	cime	bluce	pice

Table 2. List used to explain the phonetic principle involved in the behavior of the letter *c*. The words are used for analysis and *reading* first, then they are dictated for spelling with the understanding that each word will contain a *c*.

Double Final Consonant Rule

Monosyllables ending in one consonant, after one vowel, double the final consonant when adding a vowel suffix. Do not double *x* or *w*.

glop	+	ing	glap	+	ness	dref	+	er
cif	+	ed	clax	+	ing	spaw	+	ing
trast	+	er	mon	+	ful	plib	+	ist

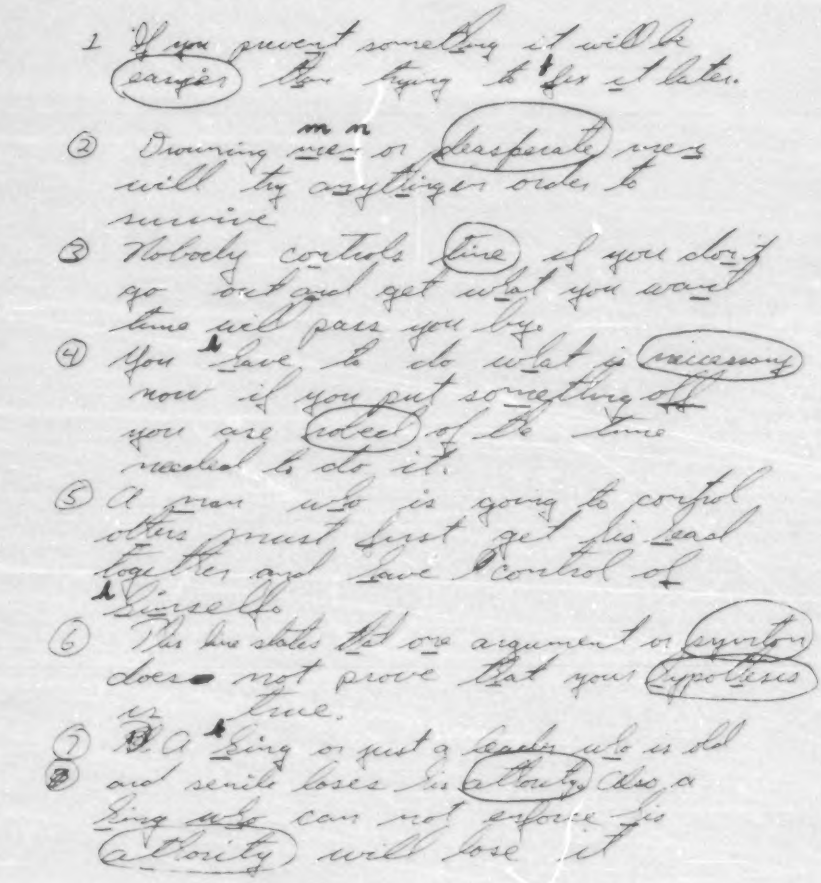
Table 3. The rule sometimes referred to as the one-one-one- rule. Students may be expected to reason that when a word ends with two consonants "trast" or when the suffix begins with a consonant "ness", the final consonant is not doubled.

followed by other letters it is pronounced /k/. In addition to the behavior of the letter *c* this particular list provides practice in pronouncing closed syllables and vowel-consonant-*e* *syllables*. Knowledge of phonetic principles involved will make these syllables phonetic for reading. Caution must be taken when using any words containing the letter *c* for spelling. Students should first read the words and then be told that each contains a *c* before they are dictated for spelling. (It is extremely important that teachers stress the fact that reading and spelling are not the same, and that students may be expected to read many words which they are not expected to spell.)

As spelling rules are taught, use of nonsense syllables will compel the older student to concentrate upon the application of the rule (Table 3). Once the rules have been mastered students should be expected to explain why they spell the "words" as they do. They can no longer say that it is because "they look right." (Notice the use of real suffixes with the nonsense "words.")

Penmanship

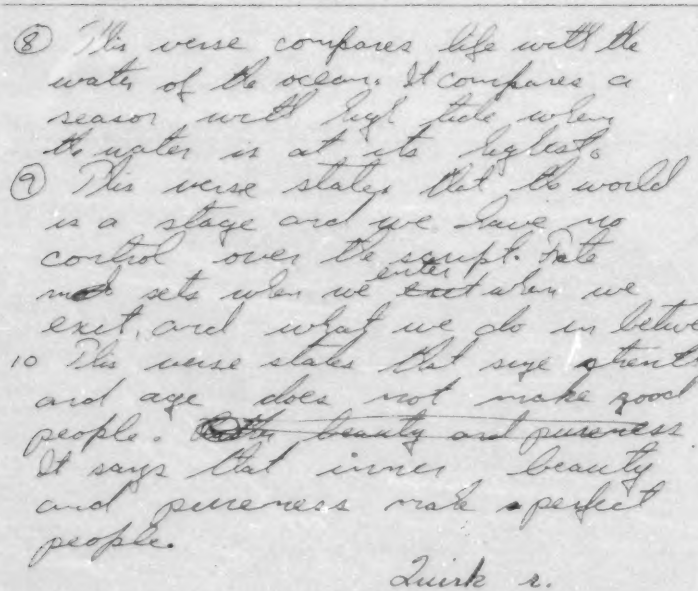
Poor spelling is not always accompanied by poor penmanship. However, poor letter formation tends to hinder spelling development because the student is deprived of the strong, accurate, visual image of words that uniform reproduction creates. The writing of the student in Fig. 3 shows great confusion: *i*'s are undotted, *m*'s and *r*'s are poorly formed, the lower part


1 If you prevent something it will be easier than trying to stop it later.
② Drowning men or desperate men will try anything in order to survive
③ Nobody controls time if you don't go out and get what you want time will pass you by.
④ You have to do what is necessary now if you put something off you are robbed of the time needed to do it.
⑤ A man who is going to control others must first get his head together and have control of himself.
⑥ This has states that one argument or assertion does not prove that your hypothesis is true.
⑦ A king or just a leader who is old
⑧ and senile loses his authority also a king who can not enforce his authority will lose it

of the *f*'s are reversed, and the same peculiar symbol is used for *h*'s and *k*'s.

There are times when a left-handed student writes with an incorrect right-hand slant. The words begin with a slant to the right, but the left-hand slant manifests itself periodically so that neither is constant. This fighting against a natural tendency is both inefficient and frustrating.

By the time a student comes to us at the junior high or high school level, writing habits are well-established. It all began in kindergarten and the first grade when teachers taught children to hold their pencils. Unfor-


(8) This verse compares life with the
water of the ocean. It compares a
season with high tide when
the water is at its highest.
(9) This verse states that the world
is a stage and we have no
control over the script. Fate
only sets when we enter when we
exit, and what we do in between.
10 This verse states that age itself
and age does not make good
people. ~~It's beauty and pureness~~
It says that inner beauty
and pureness make a perfect
people.

Zuirk r.

Figure 3. Student's lack of concern is apparent in the steady flow of writing, and in his failure to try to locate and correct errors. Undotted *i*'s, poorly-formed *m*'s and *n*'s, reversed direction of the lower part of *f*'s, and identical but incorrect formation of *b*'s and *k*'s hamper spelling.

tunately, in many instances, teachers of small children fail to realize the impact of their teaching upon future learning.

Even in these enlightened times many teachers in the early grades have children keep their papers straight on their desks when printing, as if their arms were attached to their breastbones!

Teenagers are especially set in their ways and change reluctantly because they feel secure with their manner of coping, and don't like to admit that they need help. It's all relative to them. How many times have we heard, "You think my writing is bad; you should see the rest of the kids in my class!"

However, there are two important reasons for attempting a change in penmanship—to increase the rate of writing and to improve legibility. First, we must prove to the students that they will benefit from such improvement. If they fall behind in dictation and can't write fast enough to keep up with lecture notes, the problem won't be solved by ceasing to

dictate and by providing sheets of prepared notes. Keeping a record of the time it takes to complete various written exercises is very convincing evidence.

Typical is the writing of a student who was incapable of keeping up with written assignments in class. Although the letter forms looked good, each letter was laboriously drawn rather than written. A month later, after instruction, the writing showed a more natural left-hand slant and the rate of writing had doubled. Spelling improved one year in the month of penmanship training despite the fact that spelling was not taught.

If the teacher cannot decipher the letters and marks words incorrectly spelled, students won't benefit from being able to argue that they really are correct. They must be convinced that they are not getting true value from the writing process which was invented to enable people to communicate when not on the scene personally.

Oral Reading

Oral reading in class as a means of identifying reading problems has value in the lower grades, but lessens in usefulness in the upper grades. This is because the older student, unaccustomed to reading aloud in class, is extremely self-conscious. Once he begins reading poorly, he often clowns through the exercise so that errors cannot be evaluated significantly. If oral reading is to be used diagnostically it must be done individually and out of sight and hearing of other students.

Silent Reading

Teachers often ask how they can determine whether a student is having difficulty with silent reading. One answer is so simple that many of us don't think of it. Just ask the student! I like to use an evaluation sheet which asks both specific and open-ended questions, ranging from, "Which dictionary do you have?" to, "If you have any problems, what do you think they are?"

One way to determine how students feel about their reading is find out whether they use reference books at home.

It is significant that up to the present time, throughout twenty-two years of teaching, I have heard of no students, even in the most demand-

ing of independent schools, who said they had NO problems with reading!

When students are asked what their problems are their responses are revealing. At one extreme are those with the simpler problems of speed, organization and the like who in a developmental reading class can become excellent readers.

Typical of the more severely handicapped are the observations from a bright boy with a severe specific language disability (Fig. 4). After a good evaluation he apologizes for his poor spelling by writing, "I'm a ferrarner," at the bottom of the paragraph, but crosses it out. He then makes an attempt at light-heartedness by writing "signed anxious."

In general, the all-important subject of teaching reading is too complicated for adequate treatment here, and specific suggestions run the danger of being mistaken for a simplistic solution. Once elementary decoding skills have been mastered—and this can by no means be taken for granted—attention is still needed to the questions generally treated as "developmental reading." Improvement of comprehension may come through enrichment of vocabulary, better phrasing, and direction of purpose in reading. Better concentration will follow increasing skill and the resultant self-confidence. Rate of reading is necessarily slow while skills are being mastered. It should increase as the reading processes become easier, but there may come a time when *moderate* pressure for speeding up is in order. Devices for self-timing and checking of comprehension, which should

Failure to comprehend what I've read +
too slow a speed, probably brought about
by interest lagging and mind wandering.
Unwillingness to sit down + read a long assignment
all brought on by tired messes after Sports.
~~I'm a ferrarner~~

signed anxious

Figure 4

never be sacrificed, abound in the voluminous "how-to-read-better-and-faster" literature.

Speaking

Presence of specific language disability may be observed in a student's speaking, but such observation requires practice on the part of the teacher. One must learn to listen to what a student says and analyze it. In answer to the question, "Who was Daniel Webster?" a student replied, "Daniel Webster was a noted oracle. He should not be confused with Noah Webster, a king from the Bible who reigned for forty days and forty nights". By saying that Daniel Webster was an oracle the student was seeking the word "orator." He associated Noah with forty days of rain, unfortunately his understanding of "rain" was incorrect.

Reversals such as those mentioned in spelling may also be evident in speaking. They may be: 1) letter reversals, as saying *antibote* for *antidote*; 2) reversals in the order of letters, as saying *aminate* for *animate*; or 3) reversals in the order of words, as saying *How last will it long?* Spoonerisms such as *tons of soil* for *sons of toil, douch town* for *touch down,* and *a blushing crow* for *a crushing blow*, may also be classified as reversals.

Teaching Techniques

A very few teaching techniques have been included in this presentation although volumes can be written about each of the language skills.

Spelling may be taught as already suggested, through the use of nonsense words to encourage application of phonetic principles and use of spelling rules. Mastery of suffixes may be accomplished by teaching both correct spelling and definitions. This is an especially good manner in which to present them, as the student's minds will readily focus on the "real" syllables in the nonsense words with which they are working. Syllabication, also used with nonsense syllables is another strong spelling aid.

Penmanship may be improved to varying degrees; the amount of improvement will frequently depend upon the teachers' and students' attitudes. The student should sit up properly without slumping or leaning on the desk; he should place his or her arm on the desk in a writing position with pencil in hand. Then the paper should be slipped beneath

the hand and arm so that the arm is in the center of the slanted paper. The correct position of paper will result in the slanted writing produced by freedom of motion.

Writing the alphabet is excellent practice which serves a two-fold purpose. It stresses letter form and teaches the alphabet once again to students who have lost their ability to make use of this valuable language tool. A startling number of students cannot write or read the alphabet quickly and accurately. This ability is, of course, vital in the use of reference books, telephone books, and filing systems.

These are only a few of the teaching techniques which may benefit the adolescent. They are applicable to students of various abilities and in a variety of situations ranging from individual lessons to regular classes. The adolescent is a fascinating student to teach and presents a real challenge. Our success with these students will depend upon our skill as teachers.

Editor's Note. Many interesting specific suggestions made by the author in her talk have not been included here for reasons of space, and since they and many others are readily available in such publications as Alice Ansara's "Language Therapy to Salvage the College Potential of Dyslexic Adolescents" (Orton Society Reprint No. 48), Eleanor Hall's *Learning the English Language* (Skill Books I and II), 1974; and Chapter 4 in the 7*th* edition (1960) of the Gillingham and Stillman manual, *Remedial Training for Children with Specific Dysability in Reading, Spelling and Penmanship.*

Many other resources for teachers can be found in the 1974 edition of the Orton Society's Bibliography, reviewed in this issue of the *Bulletin.*

Dyslexic Adolescent Boys: Classroom Remediation Is Not Enough

David W. Gow

David W. Gow is Associate Headmaster, The Gow School, South Wales, New York. This paper was presented as a talk at the 24th Annual Conference of the Orton Society, Baltimore, Maryland, 1973.

Each year thousands of teenaged boys and girls drop out of school. Thousands more fail in the classroom and yearn to drop out. Countless thousands more encounter far more difficulty in the classroom than their measurable intellectual endowment would suggest. Teachers breathe a sigh of relief to be rid of some troublemakers. They may scratch their heads and wonder why so-and-so failed or why so-an-so had such a poor record. In general, however, what amounts to a national disgrace is quietly swept under the scholastic rug and state education bureaucrats continue to revise their statistics on "unmotivated" students who have quit school while other bureaucrats in the labor department add that number to the ranks of the unemployed. Some of these youngsters weather the storm, luck out, lead meaningful lives and raise families. More gravitate toward the eternal symptoms of despair—idleness, drugs, petty crime. The departed are soon forgotten. Occasionally we may read about them in the stories of a presidential assassination, but for the most part they become a part of the anonymous underside of society, the scourge of our leaders and the bane of our social workers.

Between the lines of this sad litany, you and I, as specialists in the field, will see the unmistakable signs of wasted ability and of dyslexia. This is not to suggest that all high-school dropouts are dyslexic or that most of them are driven to crime. Too many, however, are. America mourns the casualties of its wars, and it should; and overlooks its scholastic casualties. and it should not.

For nearly thirty years I have been working with a specific type of adolescent. He is the boy with a language disability and an above average intelligence. "Above average intelligence." What do we really mean by this hackneyed phrase? Do we mean college-going? Or are we being gentle and

using this euphemistically to describe an I.Q. of 95, or even 101? Let us try to straighten out our thinking in this area. By "above average" we do not mean a 95 WISC (Wechsler Intelligence Test for Children). We mean well above 105. Of late we are all too often seeing what is called average drop from roughly 100 to roughly 85. I am sure that well-meaning school psychologists and guidance people have done this with the kindest of intentions, but I do not consider it a kindness to parents to describe a 95 WISC as above average. For years we thought in terms of an average score being one hundred, and while a few points here and there may seem unimportant, anyone who has worked with youngsters knows that there is a significant difference in teachability between 85 WISC youngsters and 100 WISC youngsters. Certainly our intelligence tests are neither perfect nor universally valid, and they should be subject to constant examination. Nevertheless, those responsible for moving the meaning of "average" downward by fifteen points have made our jobs harder, however much more comforting and reassuring such a change might be to parents.

While we are setting up our definitions, let us eliminate much of the current quasi-medical jargon and make a functional definition of dyslexia which is clear to everyone. Dr. Orton would be appalled were he to hear all the fraught-with-nought technical terms being used to describe an old-fashioned language disability. What we mean is simply a condition wherein a student is unable to write, spell, and read as well as he can think. The boy under discussion here is significantly handicapped, often scoring at least two years below grade level on achievement tests and at least two years below age level on this Otis, a group test of intelligence. He has no marked physical, mental, or emotional problems other than those produced by perhaps a decade of faltering performance in the classroom. You and I can spot these children. Why can't their teachers? Why can't their parents?

It is bad enough that academic failure caused by dyslexia is so seldom noted by parents and teachers. But there are attendant problems, too, immense problems of social adjustment, which cry out for a broader solution which most of our schools are unable to provide. How do parents and teachers explain it to themselves when a seemingly bright boy fails miserably in school, time and time again, and then wanders off into an adolescent underworld, beyond the reach or understanding of those who are trying conscientiously to help him? Do they become self-righteous and defensive, fatuously laying the blame on laziness, permissiveness in the schools, or a

breakdown in society? Or do they accuse themselves of failure and fall into a morass of self-pity which greatly reduces their own effectiveness as parents, teachers, and human beings? How often we all encounter parents who tell us of their boy's mediocre performance in school but who almost take offense if dyslexia is suggested. "That's when they read and write everything backwards. That's not my boy's problem. He's just lazy or something." With all the publicity dyslexia has received, it is still the most unrecognized "something" in our homes and classrooms today.

Somehow few people really want to admit to themselves or to others that their son may have dyslexia. At worst, he may have a "very mild case." As was the case with tuberculosis, cancer, and epilepsy thirty years ago, dyslexia to some families is unspeakable and unthinkable, an indictment of family genes, parental ability, and God knows what else. Even when parents at last accept the fact that their son is dyslexic, we still face the problem of convincing them that there is no quick and quiet way to prepare their son for Dad's old school or for Princeton. Remediation is a slow and painstaking process, and, as in every other area of human endeavor, progress cannot be accurately prognosticated every time. Human performance simply cannot be predicted. The parents and other teachers must learn to be patient.

It is of course the student who suffers most. The language disability and classroom failure, pressure from parents and teachers, these are but more burdens added to the already monstrous problems of adolescence. For the educator, teaching the bright dyslexic is like being a juggler, tossing one problem into the air just long enough to get a fleeting grasp of others before going back to the first.

How I envy those who are working with children in the primary grades, children whose interest in learning and whose attitudes toward life do not have to be completely rebuilt. By the time we see a boy in secondary school he has been battered about for eight or nine or ten years in the classroom and has had his confidence in himself and in his world shattered. The academic morale of a dyslexic second grader is not good, but that of a dyslexic ninth grader, for whom traditional teaching methods have meant a long succession of failure and increasing pressure which he is unable to relieve, is unbelievably low. We must replace long-established approaches to reading, writing, and spelling with new ones. We must overcome ten years of inappropriate training in a limited period of time—no simple matter in itself. But even more difficult is the rebuilding of an attitude toward books,

teachers, and the student's own ego which has been produced by years of frustration. The attitude of a boy with this background is seldom friendly, despite the fact that he is basically a "good kid." His previous experience has made him at best suspicious of an academic environment, and at worst downright hostile.

The problems of scholastic retraining are compounded by the problem inherent in the entire process of weathering adolescence today. Like it or not, admit it or not, today's teenager is continually tempted by available sex and available drugs. Peer pressure to experiment in these taboo areas is powerful. Feelings of inadequacy for resisting these temptations are strong, and feelings of guilt for having succumbed are equally strong. Add all this to the psychological and emotional damage produced by ten years of academic failure and you have the typical adolescent with a severe reading problem.

Most of the boys we see have long been diagnosed as dyslexic. Most have had at least one encounter with remedial reading. Yet most of them come to us quietly convinced that they are beyond help. They have college-going I.Q.'s and come from families able to pay a substantial tuition. Their world has been neatly ordered around an ethic of progress and success, but they have failed to progress as their peers have, and success in the classroom, the most significant element in their world, has eluded them.

Failure to meet the intellectual requirements of the classroom has been mirrored in an inability to absorb much of the knowledge with which the student is surrounded in the world at large. Marshall McLuhan and others have told us that we live in an age when communication has burst forth from the printed page into the air itself. You and I would never have to open a book to become informed and functional citizens. Newspapers, magazines, the airmail letter, the telegraph, the telephone, radio, television, and a network of data banks can now put us in frequent and immediate touch with our friends, our colleagues, and the mountains of information we need to run our lives, businesses, and governments.

The teenager with a severe reading problem is deprived of much of the information that you and I take for granted. We know he does not read *Time*, *The Reader's Digest*, or Thomas Hardy—he cannot read that well. What we do not always appreciate is the degree to which he is deprived of vicarious experience by his inability to translate *spoken* words into thoughts he can understand. You and I are subjected to a continuous barrage of auditory and visual stimuli that we can understand, perhaps enjoy, and

file away. The dyslexic child is at a greater disadvantage than is commonly imagined when it comes to learning by eye and ear. He watches television but fails to acquire much information from it except perhaps in those areas where his interest is strong. Try watching TV for a day without seeing a broadcast concerning some newsworthy event in London, Rome, or Tokyo. Yet the same children who have been glued to the tube for years will miss simple questions on the WAIS (Wechsler Adult Intelligence Scale) or WISC involving these same cities. Indeed, of the more than 2,000 boys I have tested since the advent of television, a very large proportion show a substantial dip in that part of the Wechsler which tests general information. We cannot attribute this deficiency to a mere inability to derive information from print. If the written word is having almost no impact on our dyslexic youngsters, the spoken word is not having much more. These children are literally turned off to what we might expect would be the electronic salvation of those who cannot deal with printed communication. The pity is that teachers and parents are generally unaware of the degree to which these youngsters are handicapped by their inability to deal with words in a world where being completely and accurately informed is paramount.

Besides lacking the tools with which he can fully enjoy the richness of the vicarious experience available through the media, the dyslexic adolescent tends also to suffer from a maturational lag, both physical and emotional. Although we have not compiled statistics regarding the physical maturing of our students, it is safe to say that these boys shave later than is average and often attain their full height later than their peers. Fine muscular coordination seems to develop later. The emotional lag is equally hard to gauge, but such youngsters seem to weep more easily and to recover from their travails less rapidly than do other boys their age.

Unable to respond fully to normal printed and spoken verbal stimuli, these young people gain information through oral repetition—seldom from textbooks. Much of their intake is distorted and faulty. They are more apt to listen to their peers, who do not threaten them with the same pressures to succeed as their elders, than to their parents, teachers, and preachers. Unfortunately, because of their poor school performance and "loser" reputations, these youngsters are often shunned by their true intellectual equals and chronological peers. Deserted and lonely, they gravitate toward others like themselves. With this element, unable to cope with school, hostile to it and to traditional and family value systems, they feel especially comfortable and even proud. For once in their lives, they feel that they belong. This

group is interested mainly in cars and motorcycles, although its members are perhaps no more mechanically adept than nondyslexics. It is also a group which is especially susceptible to drug use. Sadly, the extent of these boys' involvement with unconstructive and even unsavory activities is all too often unrecognized by their families.

This is not to suggest that every adolescent boy with a serious language problem ends up using narcotics or as a Hell's Angel. It is to state categorically that such youngsters are particularly vulnerable to such pursuits and that parents and teachers had better face up to this reality.

What, then, is this youth like? He is a little less mature than his successful schoolmates. He has a good head. He has been tutored and has a smattering of phonics. His spelling is poor. His handwriting is barely legible. He reads but his performance lacks accuracy. Punctuation is ignored in reading and writing. Thanks to Sputnik, his arithmetic is faulty. The New Math, hailed as the swiftest route to technological parity with Russia in the late 1950's, is tailor-made to further crucify these boys. Based on abstract concepts and heavy on nomenclature, this New Math is not for the dyslexic youngster. Most of the boys we see are from two to three years behind grade level in mathematics. This was not the pattern before the New Math. Nor is this the true dyscalculia of which Dr. Orton wrote. With emphasis on fundamentals and lots of drill repetition, our students often jump four full grades in achievement rating in a single year. It isn't that the boy cannot learn arithmetic, or progress could not be so spectacular. They are victimized by the method, which makes some of us call it "the damnable New Math." I am not sorry to see signs in the media that America's love affair with New Math is over.

Our primary task is to build confidence in the teenage dyslexic boy. His self-image, his self-esteem, and his self-confidence have been badly torn apart. Three distinct areas must be attended to: academic, physical, and social. The development of academic confidence can only come from the building of classroom competence. It is not my intention to go into detail on classroom methods, an area upon which others have already commented so completely and so well. We stress careful attention to detail. Latin, abounding in detail, is an excellent tool for instilling intellectual discipline through a highly phonetic language. Furthermore, because it is the ending of a word that is most important in Latin, the youngster who is accustomed to reading the first two syllables of an English word and getting the rest by context and intelligent guess, though often erroneously, is of necessity forced to use

greater care. It is difficult. Yet students do learn Latin, and the training derived therefrom is magnificent. (Spanish, by the way, is a chore for the dyslexic student. French, which looks so unlike its sound to the native speaker of English, is torture. German, highly inflected and phonologically complex, is sheer hell.)

The slow and highly structured academic program must be complemented by a structured school life-style. The need for structure cannot be overemphasized. At first it is not comfortable. Having to be places on time, having to wear a coat and tie, having to behave in a prescribed way is hard to take for a boy who has been wandering around turned off to the order of a complex world for most of his life. For a youngster whose home life has been chaotic, fitting into a structured school environment can, at least at the outset, seem impossible and be thoroughly distasteful, although after a student accepts such an environment it often gives him a feeling of security, and even pleasure.

Bodily growth and physical changes—or lack of them—give the adolescent an extraordinary interest in his own body. An intensive program of athletics serves a number of worthwhile purposes, especially for the frustrated boy who has had a disappointing morning in the classroom.

Athletics, sports, and games, as we all know, help develop improved muscular coordination, especially hand, eye, and foot movement. We are firmly convinced that athletics, properly taught, can be of tremendous value in turning a clumsy child into a fairly well-coordinated adult.

The simple pleasure of hitting a well-padded friend over the head with a lacrosse stick or booting a soccer ball half the length of the field can be immensely satisfying to one's ego—without doing damage to others. Taking out academic frustration by body contact sports is excellent therapy.

Again, all games have rules, and the element of structure and organization enters a boy's thinking as he plays.

The idea of being one of a group, of being a member of a team, reinforces the boy's awareness that he is not alone and that no man operates in a world of his very own. The individual is an integral part of society and must constantly be reminded of his dependence on other human beings, and that they likewise depend on him for constructive contributions.

Athletics, and being forced to try something perhaps new and different, is a valuable lesson. It is a great moment when one learns that one can do something even rather ineptly, and still have a lot of fun doing it.

Physical exercise, especially contact sports, is particularly valuable for the

dyslexic boy. Here he is bound to achieve some measure of success—perhaps a great deal of it—and this helps convince him that he is not the complete failure he has thought himself to be.

There is, of course, a need to keep this athletic activity in proportion. The adulation and pampering with which our society treats its young athletes is hardly beneficial, nor is emphasis on victory at all costs a desirable value, especially in the secondary school. The arena of physical contest is valuable as a means of building self-confidence only if it is viewed in the perspective of the overall program.

The social milieu is an area where the typical dyslexic teenager is at a special disadvantage (though there are some who have great social charm and skill). He frequently cannot accurately interpret the words of others and he has a great difficulty articulating his own thoughts and ideas. Repeated failure in establishing good relationships with others—his peers, his family, his teachers, his parents—has compounded the frustration initially produced by poor classroom performance. "No one can possibly help me," he says. "I am a dud." Here, as in the other areas, his confidence is nonexistent. When he speaks he seldom looks at the other person and he has given up trying to pull his own weight socially. His verbal sense of humor is apt to be weak. On the other hand, he may handle spoken and social language well and fall down only in relation to print or writing.

Our approach to the problem of social confidence at The Gow School is based on a weekly session called Interpersonal Relations. Unlike our other classes, this group is not small. We prefer thirty-five or forty people and we welcome any guests that can come. In IPR, as the boys call it, we overcome a number of social hangups and seek to build social confidence through doing these things that we fear most. We encourage an enormous amount of speaking before the group—both prepared talks and topics assigned only seconds before the speaker is to begin. We never criticize a speaker's performance. Instead my wife, who handles this part of the course, finds something in each boy's performance that merits sincere praise and tells the entire group how good it was. It may be his animation, his diction, his organization, or how interesting his topic was. These sessions last for two and a half hours and are by no means an encounter group or a T-group. However, as a boy speaks he often says something revealing which the group senses and which makes it easier for us to help the boy. One new boy told of an epileptic seizure he had suffered. He described to us what a blow it was when his family informed him about his malady, and how with

medication he now leads a normal, vigorous life. Everyone in the room respected his courage, and this physical "imperfection" was turned into a social asset by his frank and sensitive talk. We also learn a great deal about families that does not show up on application forms! Many of our students have serious family problems which demand their attention. While naturally we have to exercise care and discretion to discourage the public discussion of private family matters that are largely none of our business, general treatment of critical subjects is both possible and helpful. For example, one of our sessions each year is devoted to a discussion of the topic "My Parents Fight and It Tears Me Apart." This is certainly not a topic most boys would openly discuss, but it is apparent that they appreciate help in coping with this common situation.

Getting on one's feet and talking provides great practice and inevitably builds self-confidence. We do not expect to produce great orators, but we have developed human beings who are not afraid to talk to strangers or to a group. Furthermore, such speaking provides valuable practice in the organization and articulation of ideas.

We also devote much time to reminding the group of certain simple rules of human conduct which when followed lead to a happier and more successful relationship with other people. There is nothing at all new or different about these precepts. People need to be reminded, however, and this we do a lot. Simple things, such as making an effort (and it doesn't take much) to get the other person talking about *his* interests, or remembering to show appreciation to other people. We are really trying to help the students avoid friction in their daily relations with others.

We also devote time in IPR to cooperative problem-solving sessions. The students thoroughly enjoy this, and their solutions to problems confronting the school are often genuinely helpful. Here we have also observed, incidentally, additional evidence of weak general information due to faulty intake. On the well-known "Desert Plane Crash Survival Experiment" our students scored well below other groups. This was surprising to us, as many of the group had had more extensive camping experience than those in groups which scored better. The implication, in this case at least, is that vicarious experience gathered through good input by reading and auditory media may be more effectively recalled and utilized or at least verbalized than firsthand experience.

These sessions are fun, and unlike the painfully slow progress we see in the classroom and the relatively modest growth in confidence produced

by athletics, Interpersonal Relations yields almost immediate discernible results.

Last year we divided the school into groups. One attended weekly IPR sessions. The other did not have IPR at all. By Christmas it was obvious which boys were in each group. IPR boys were doing better in the classroom and in other areas than members of the non-IPR group. We subsequently began meeting both groups on a weekly basis and saw excellent results. The last month of school we met neither group and morale at once declined. The incidence of petty vandalism and antisocial conduct grew, and we regretted our move. Clearly, these sessions must meet on a regular and frequent basis to be effective.

It is my earnest conviction that we have long been underestimating the ancillary trauma produced by a severe language disability and that we have sought remediation primarily in one area—the classroom—while paying too little attention to others. Attempting to repair and retrain through pedagogical and classroom skills is only partially efficacious. Of course, this most important aspect cannot be slighted if we are to expect results, but dyslexia demands a coordinated, integrated, threefold approach and a full-time program. We do not believe that the adolescent can be substantially benefited on an "out-patient" basis, working perhaps thirty minutes a day, five days a week before, during, or after his regular school hours. While such tutoring is helpful, it does not bring sufficient attention to bear on the problems of social behavior and physical activity. We are constantly reassessing and readjusting our own program to deal with the broad range of areas in which our students' performance is impaired because of their language disability. And although the process of re-educating the dyslexic teenager is a demanding, arduous, and often frustrating task for the teacher, these youngsters can be helped to emerge as even more stable and capable performers than their peers, having gained strength from struggle.

In sum, if we are going to turn our discouraged and frustrated dyslexic adolescents into happy and productive adults, it is imperative that we open our eyes to the broader realities of the students' entire relationship in an increasingly demanding world. We must adapt our educational methods to the needs of the student as a complex human being whose life in the classroom, even though it is crucial, is but one aspect of his existence.

Reading Failure and Juvenile Delinquency

Dennis L. Hogenson, Ph.D.

Minneapolis, Minnesota

Anyone who has worked in a juvenile court system, a boys' training school, or a similar facility where delinquent adolescents are confined and evaluated will have been impressed with the conspicuous prevalence of reading failure encountered. Indeed, the literature dealing with delinquency is so heavily saturated with accounts of school failure and reading underachievement that anyone who will take the trouble to examine this relationship will easily be convinced that the typical adolescent boy who has been ajudicated a delinquent has also failed to achieve in reading. The problem is that while reading failure and delinquent behavior have been closely associated for decades, no one has been able to clearly determine which is cart and which is horse. Do delinquents simply not care about or take the time to become effective readers because they are too busy with their sociopathic activities, or does reading failure in some way become a psychogenic factor in delinquent behavior?

The problems in establishing casual relationships for two such complex behaviors as reading failure and delinquency are, of course, considerable. While reading failure can be observed in the child's first years in school, the consequences of this failure assume a cumulative effect over several years, and personality deterioration as a result of prolonged frustration may not be apparent until adolescence. Similarly, delinquency has long been thought to be a byproduct of complicated social factors which have economic, family, ethnic, and peer group implications extending over the adolescent's life experiences. In effect the only position a research study into the relationship between reading failure and delinquency can maintain is one of statistical correlation. If it can be shown that disproportionate and statistically significant numbers of adolescents, who have failed in reading and who later become delinquent, differ in important ways from other adolescent delinquents who have *not* failed in reading, then the possibility of objectively evaluating the psychogenic importance of reading failure to delinquency becomes a real possibility. While admitting that correlation does not imply causation, one is still faced with the sticky problem of explaining a relationship that could not be expected to occur by chance alone.

There are a number of other problems which must be considered when attempting to suggest a relationship between reading failure and delinquency. No one wishes to suggest that all children who fail in reading will later become delinquent. Such a suggestion would be unduly alarming, naïve, and not supportable empirically. Similarly, it would be very difficult to suggest that the schools have been unduly negligent in their approaches to early reading instruction. Unfortunately many educators have tended to view the delinquent as someone who has lacked motivation toward social conformity in general, and lacked motivation toward academic excellence in particular. Such a perspective has obviously been more comforting than the unsettling possibility that the schools themselves have actually been the cause of a complicated process that has resulted in sending many of their failures to boys' training schools as adjudicated delinquents.

Research Model

To demonstrate that school failure in reading which begins in primary school can result in delinquent behavior during adolesence, one must establish a hypothesis to link the two experiences. The following hypotheses were developed by me: (1) Continued failure in the most significant educational task challenging the child (reading) is a deeply frustrating experience when permitted to continue for several years, and when such failure begins prior to the child's developing ability to think rationally (approximately age seven and one-half). (2) Continued frustration over prolonged periods of time will result in aggressive behavior directed outward toward society (delinquency) or inward toward the self (neurosis). (3) Confined delinquent boys who have failed in reading will have behavioral histories showing more anti-social aggression than confined delinquent boys who were able to read. These hypotheses are based on objective findings relating frustration to aggression (Dollard and Miller, 1939; Miller and Dollard, 1950; Dinwiddie, 1955; Maier, 1956; and Gottfried, 1959) and on my own subjective personal memories as a reading failure who spent two years in both first and second grades.

Method

Two experimental populations of 48 boys each were randomly selected from state training schools in Lansing, Michigan and Red Wing, Minnesota.

The following data were available for each boy: (1) a complete social and behavioral history including court transcripts and notations covering behavior both before confinement and while at the training school; (2) an individual Wechsler intelligence test; (3) a reading achievement score based upon completion of Form K of the Stanford Achievement Test; (4) a student attitude instrument filled out by each boy (Minnesota Student Attitude Inventory); (5) a measure of Rokeach's construct dogmatism (Dogmatism Scale); (6) data about each boy concerning family, community, economic, and ethnic variables. The rationale for using two populations widely separated geographically was to help cancel out regional effects.

Following the collection and tabulation of data, it was possible to estimate each boy's degree of reading failure (using IQ measures and actual reading achievement test scores, and each boy's history of anti-social aggression, and to evaluate a host of related demographic factors pertaining to each boy. It was also possible to calculate rank order correlations on the above variables for each boy, and to examine levels of statistical significance among variables.

Findings

It has been proposed by others that delinquent aggression is related to multiple causations (Mannheim and Wilkins 1955; Balogh 1958); to forced close dependency involvements and unfavorable early socialization (Bandura and Walters 1958); to infantile fantasies of omnipotence (Bernabeau 1958); to a lack of family and social controls (Nye 1958); to birth order among siblings (Mukherjeek and Kundu 1961); to body type (Gluek and Gluek 1957); and to reading failure (Backwin 1955).

Spearman rank order coefficients of correlation (Edwards 1960) were computed for each of our population samples separately. The correlations between reading and aggression were .33 for the Lansing sample and .40 for Red Wing. A *t*-test for significance (Hays, 1965) revealed that both correlations were significant* beyond the .05 level (Lansing, .025; Red Wing, .005). Thus, a significant correlational relationship between reading underachievement and aggression was demonstrated in two groups of widely separated delinquent adolescent boys.

* They were greater than could be attributed to factors of chance alone—in this case substantially greater.

In addition, the court report proved to be the most reliable measure of aggression across populations. Dogmatic attitudes among the boys did not appear to be related to either reading failure or aggression. School attitudes (self-report scale) did correlate with aggression. As one might expect, IQ was found to correlate with reading success in both groups. In a careful Chi-square analysis of demographic factors, none of the factors were found to be significantly related to aggression in either population of confined delinquent adolescents. That is, the present study was *unsuccessful* in attempting to correlate aggression with age, family size, or number of parents present in the home, rural versus urban environment, socio-economic status, minority group membership, religious preference, etc. *Only* reading failure was found to correlate with aggression in both populations of delinquent boys. IQ was equally related to reading among more or less aggressive boys.

Discussion

The present study suggests that while we have known for decades that many children fail in reading, we have paid far too little attention to the eventual social consequences of this deeply humiliating experience. It is possible that reading failure is the single most significant factor in those forms of delinquency which can be described as anti-socially aggressive. I am speaking of assault, arson, sadistic acts directed against peers and siblings, major vandalism, etc. and not the more usual or garden variety delinquent acts such as car theft, burglary, etc. which most commonly result in adjudication to a boy's training school. It is possible that a detailed study of adolescent referrals to mental health agencies would also establish reading failure to be a common corollary with those forms of severe neurosis in which aggression has been directed in upon the self with consequent ego deterioration. A frustration-aggression hypothesis would apply equally well in cases where early reading failure resulted in adolescent neurosis. In such cases, one's personality type (introvert rather than extrovert) together with early constraints on overt aggression might determine that frustration caused by school failure would be directed at the self rather than at society. It is possible that much of the frustration associated with reading failure can be avoided.

Toward this end, I would offer the following suggestions:

1. Increase the size and efficiency of remedial reading programs, especially at the primary school level.
2. Redesign existing remedial programs to meet individual learning needs, using models of tested effectiveness.
3. When necessary, delay reading instruction until the child is developmentally and cognitively able to understand failure (i.e., to at least age eight).
4. Continue remedial reading and language programs as long as necessary, even through high school and into adulthood.
5. If a child is failing in reading, carefully explain to him why. Explain also that it is *not his fault*, nor is he dumb, and that reading skill, after all, is not the best measure of his worth as a human being.

We need to guard ourselves against the temptation to believe that like fresh air, pure water, and a loving mother, staying in school is somehow good for everyone.

We must admit that the problem of staying in school and always failing can be very frustrating. It cannot be a coincidence that in New Jersey three state training schools report an average reading grade level of 4.6. In Texas, children between the ages of 10 and 16 and in penal institutions are reading at an average grade level of 3.2. In South Carolina, the average grade level in reading for confined adolescents is 3.4. In Missouri, the average reading level for all incarcerated adolescents is mid-fourth grade. As one collects data on the relationship between reading failure and delinquency, one becomes depressingly aware that the relationship is neither minimal in degree nor regional in prevalence.

It has been reliably estimated that the cost of confining one adolescent delinquent in a state training school for one year exceeds $10,000. With a similar amount of money, it would be possible to send that same boy to an excellent and exclusive boy's prep school, buy him $2,000 worth of clothes, send him to the Carribean over Christmas and to Europe for the summer—and still have money left over.

Prevention seems preferable to confinement!

References

Backwin, H. 1955. Causes of juvenile delinquency. *Amer. J. Disturbed Child.* 89:368–373.

Balogh, J. K. 1958. Juvenile delinquency proneness: a study of the pedictive factors involved in delinquent phenomena. *J. Criminal Law and Criminology* 48:615–618.

Bandura, A. and Walters, R. 1959. *Adolescent aggression: a study of influences of child training practices and family interrelationships.* New York: Ronald Press.

Bernabeau, E. P. 1958. Underlying ego mechanisms in deliquency. *Psychoanal. Quart.* 27:383–396.

Critchley, E. M. R. 1968. Reading Retardation, Dyslexia and Delinquency. *Brit. J. of Psychiatry.* 115:1537–1547.

Dinwiddile, F. W. 1955. *An Application of the principle of response generalization to the displacement of aggressive responses.* Washington, D.C.: Catholic University Press.

Dollard, J. and Miller, N. 1939. *Frustration and Aggression.* New Haven: Yale University Press.

Evans, J. and Action, W. P. 1972. A psychiatric service for the disturbed adolescent. *Brit. J. of Psychiatry.* 120:429–432.

Feldhusen, John F., James A. Benning and John P. Thurston. 1972. Prediction of delinquency, adjustment, and academic achievement over a 5-year period with the Kvaraceus Delinquency Proneness Scale. *J. of Educational Research.* 65:375–381.

Glick, Oren. 1972. Some social-emotional consequences of early inadequate acquisition of reading skills. *J. of Educational Psychology.* 63:253–257. 1972.

Glueck & Glueck. 1956. *Physique and Delinquency.* New York: Harper and Brothers.

Gormly, John and Michael J. Nittoli. 1971. Rapid improvement of reading skills in juvenile delinquents. *J. of Experimental Education.* 40:45–48.

Gottfried, N. W. 1959. Psychological needs and verbally expressed aggression in adolescent delinquent boys. *Dissertation Abstracts.* 19:3352–3353.

Granbard, Paul S. 1967. Psycholinguistic correlates of reading disability in disturbed delinquent children. *J. of Special Education.* 1:363–368.

Granbard, Paul S. 1969. Utilizing the group in teaching disturbed delinquents to learn. *Exceptional Children* 36:267–272.

Halstead, Lester M. 1970. A new approach to teaching retarded children to read. *Corrective Psychiatry and J. of Social Therapy.* 16:59–62.

Hurwitz, Irving, Roger M. A. Biback, Peter H. Wolff and Barbara Rowbottom. 1972. Neuropsychological function of normal boys, delinquent boys and boys with learning problems. *Perceptual and Motor Skills.* 35:387–394.

Kulik, James A., Theodore R. Sarbin and Kenneth B. Stein. 1971. Language socialization, and delinquency. *Developmental Psychology.* 4:434–439.

Maier, N. H. 1956. Frustration theory: restatement and extension. *Psychological Rev.* 68:370–388.

Mukherjeek and Kundu. 1961. A study of birth order and family positions of the criminal. *Indian J. Psychol.* 36(3):127–132.

Miller, N. and Dollard, J. 1950. *Personality and Psychotherapy: An Analysis in Terms of Learning.* New York: McGraw-Hill.

Mulligan, William. 1972. Dyslexia, specific learning disability and delinquency. *Juvenile Justice.* 10–25.

Murray, Michael. 1972. Progress in the investigation and treatment of language disability. (Unpublished Study.)

Raffaele, Joseph Anthony. 1972. An investigation into the effects of student contracts upon the attitudes and achievement of reading of institutionalized adjudicated juvenile delinquents. Unpublished Dissertation. University of Pittsburgh.

Salvatore, Donald. 1971. Effects of methods of teaching reading on reading achievement and attitudes toward self of delinquent boys. Unpublished Dissertation. University of Maryland.

Tarnopol, Lester. 1970. Delinquency and minimal brain dysfunction. *J. of Learning Disabilities* 3:200–207.

Thornton, Spencer P. 1971. Diagnosis of causitive factors in reading problems. *J. of Tennessee Medical Assoc.* 64:778–781.

Wilf, Selma. 1972. Observable student behavior as indicators of emotional maladjustment and reading disability. Unpublished Dissertation. Arizona State University.

The Dyslexic Copes

Norman Phillips
George Bright, M.D.
Richard Berg
Foster Nowell, Jr.

This is based on a panel discussion that was part of the 24th Annual Conference of the Orton Society held in Baltimore in 1973.

A panel discussion, "The Dyslexic Copes," was arranged for the last morning of the Conference. Its moderator, Norman Phillips, here sets the stage and gives some of the action, but the delightful contributions of the panelists must remain in the memories of those fortunate enough to have heard them. Dyslexics just don't get papers written, but we love them anyway!

—Editor

Whatever your interest, whatever your discipline, we hope you will find something to think about in what we have to say. We were Norman Phillips, the father of four dyslexic sons, Richard Berg, a student at Randallstown High School in Maryland, Dr. George Bright, Director of Adolescent Medicine, Department of Pediatrics, Health Sciences Division of Virginia Commonwealth University in Richmond, and Foster Nowell, Jr., principal of Indian Lane Junior High School in Media, Pennsylvania. Everyone except me was and is a diagnosed dyslexic. As for me, I can't spell cat, even if you spot me C–A; and with a dyslexic wife who is a language therapist, and all those dyslexic kids around, well, draw your own conclusion.

What I asked each of the panelists to do was, "Tell what it was like before you were diagnosed; tell what it was like when you were in therapy; and tell what it has been like since you were furloughed."

Whatever your interest. . . .

George Bright began the discussion. He talked of his own often baffling boyhood and of his work with young patients, whose difficulties are sure of an understanding when they come his way. You can read his thoughts

about them in his paper of 1969, "The adolescent with scholastic failure," in *Bulletin of the Orton Society* XX, 1970, or in the OS Reprint Number 33.

Then Richard told his story. A handsome, well-set-up young man, just finishing high school after some years of special help, he seemed ready to face the world and make a place for himself in it. He had chosen, that morning, between participating in a rather special event in his favorite sport, motorcycle racing, and being with us, a choice the outcome of which left us all wiser and more optimistic.

And finally Jerry gave us his views. The early part of his story you can read in Margaret Rawson's book, *Developmental Language Disability: Adult Accomplishments of Dyslexic Boys* (Johns Hopkins University Press, 1968), of which he is, in a sense, the hero. He has gone on to a variety of teaching and administrative posts. He told both of his continuing high-hearted battles with the vagaries of language and of his efforts in behalf of the many dyslexic young people in the suburban junior high school of which he is the sympathetic and genial principal.

And there we had the "formal" portion of our very informal panel. What followed was probably a glimpse of the multitude of questions puzzling parents, educators, medical people and dyslexics. Let's face it, a lot of people are interested in dyslexia, or at least aware of the problem, but each sees it from a personal viewpoint and precious few of us can even begin discussion from the same base.

Educators, as a professional group, either accept or deny the existence of the problem. If they accept it, the student may be given shotgun "treatment" along with others with totally different learning disabilities, or directed to a sort of fielder's choice of specific therapies. Some help. Some do not. There is no general agreement in the total educational field.

The same situation seems to exist in the medical professions, with some believers, some non-believers and some who have heard of the problem and "really ought to look into it." Again, no general agreement on problem, diagnosis or prognosis.

Which leaves the poor parents wandering through a heart-clutching maze of suggestions and countersuggestions, and leaves the poor dyslexic helped or hindered or destined for the human trash heap, depending on the parents' reaction to the professional advice they trust.

And that is assuming, of course, that the parents will even entertain

the idea that a child of theirs could possibly have a learning problem. Too many of us, particularly fathers, absolutely refuse to listen!

It was within this framework that our audience bombarded the panel and each other with ideas and questions. And it was out of this framework that some truly beautiful ideas emerged.

Summarized, the give and take revolved around environments and people.

The dyslexic is going to be able to "cope"—a term that drew considerable fire because of its negative connotation—when the family provides a loving and an understanding environment, and educational assistance that includes compensatory programs to help overcome the neurological malfunction.

But of equal or even greater importance, the dyslexic is going to reach the exceptional potential most of them are capable of reaching when the people involved "catch on".

The key is the dyslexic himself. He must be helped to understand himself, what he can do, what he will have trouble doing, and how to do it anyway.

We've made poor progress illuminating the dyslexics who have not only coped, but achieved outstanding success, models for other dyslexics to follow.

And we don't seem to have made great progress in using dyslexics to help dyslexics. Who could have greater empathy, greater sympathy, or serve better as an example of what can be done?

Parents are another matter. Their fundamental concern is and should be the child, their child, but we will be forever in the forest of frustration if their concern stops there. Parents, banded together, seem almost the only factor that can force a proper solution to the cross-disciplinary confusion that clouds the question of dyslexia today.

It may be an unfortunate fact, but pressure, political pressure, and publicity, educational publicity, appear to be the answers capable of clearing up the issue within a reasonable amount of time—time that today's dyslexics simply don't have. Public pressure can focus interest and marshall resources to get the job done. We have to find one another, on a one-to-one basis if necessary, educate one another and then act. We must talk to our educators and newspapers and, if necessary, speak in a loud voice at the polls.

To paraphrase an old selling slogan, "Nothing happens until somebody does something," and it is time for parents to do something.

Such action will have some effect on professional people to be sure—that is part of what it is meant to do—but our "insiders" have their work cut out for them, too.

And again, the peer-to-peer approach seems best.

Our medical experts must be missionaries to other medical experts. Our educational experts must be salesmen to other educational experts.

We must tell our story. We must force positive action.

Our problem, the problem of the dyslexic, is complex, let us not fool ourselves on that score, but there is bound to be a set of solutions, certain keys that will unlock the door to the kind of futures these marvelous kids could have.

Working together, each doing his thing, is one step in the right direction.

THE INTERNATIONAL SCENE

Two of our colleagues, experienced teachers of children with language difficulties, traveled on separate but overlapping routes in several European countries early in 1973. They shared their experiences with those attending the Orton Society's Annual Conference in Baltimore in 1973.

Dyslexia in Europe—I

Connie Newell

East Orleans, Massachusetts, Public Schools
and Adjunct Instructor, Loyola College,
Baltimore, Maryland

In the spring of 1973, I visited six countries to observe dyslexic children in clinics and classrooms and to talk to colleagues engaged in implementing programs for these youngsters. Collecting data and commenting about European ways is fraught with danger for an American. What I write is an interpretation, subject to such influences as dealing with semantics of language, reacting as an American to each of the various cultures, and working under pressures of time and adapting to a new environment every few days, while at the same time focusing on the problems at hand. I traveled abroad ever mindful of Edward T. Hall's books, *The Silent Language* and *The Hidden Dimension*. However, as I moved about Europe visiting classrooms, I readily recognized the familiar language learning problems that hinder the dyslexic youngster no matter what particular language he learns.

In each country I visited, except for England, I found that the definition of dyslexia was not a problem. I learned that colleagues in the four countries I visited are essentially comfortable with the definitions drawn up by the World Federation of Neurology's Research Group on Developmental Dyslexia and World Illiteracy at their meeting in Dallas, Texas, in April, 1968. Based on the Federation's definitions, I found that the incidence of

dyslexia was four to five times more prevalent in boys than girls and that consistently four to five percent of the population of school children are markedly dyslexic.

In England, Marion Welchman, director of the Bath Association for the Study of Dyslexia, coordinates programs that train teachers, organizes parents into associations, tutors children, and informs members of Parliament about the problems of dyslexia. There educational psychologists refer children for remedial reading programs. They feel that poor reading stems from either emotional or deprivational causes. The definition of developmental dyslexia is not accepted by most educational psychologists working in the public schools of England. Remedial reading instruction is limited and teacher education colleges do not train teachers in this field; therefore, children needing help in language skills go to private tutors or to private clinics. The Bath Association is a pioneer in the understanding and treatment of dyslexia.

There are optimistic notes for England's dyslexics. There is a new national organization, the British Association for Dyslexia, whose aim is to work for educational needs of these children and for legislation to implement programs to meet these needs. New clinics, under the directorship of trained language therapists, have opened a new center. The Adult Center for Literacy opened in the spring of 1974 under the direction of Miss Catherine Moorhouse who leads a vital fight for the education of adult dyslexics.

Those involved in England's effort to train dyslexics are among Britain's pioneers in the field of special education. They have courage in a lonely fight, but they have the determination and skills to bring about an effective program in the future.

In Denmark I found that the dyslexic child's needs are well provided for by legislation that requires these children to have special instruction. Local school authorities must provide reading clinics in their schools staffed by trained teachers.

In a Danish government publication, *Special Education in Denmark*, the authors state that nearly five per cent of all Danish children need long term specialized instruction in reading, speaking, and spelling. The volume also notes that ten per cent of the primary middle-form children receive a shorter period of instruction in the reading clinics.

In classrooms all over Denmark, teachers from the second class upward may refer a child having reading difficulty to the school psychologist and

principal. Diagnostic procedures include the WISC, perceptual tests, acuity tests for vision and audition, and standardized reading, spelling, and arithmetic tests. A medical or psychiatric test may be given through the school. Depending on the child's need, an individual program is developed. In the schools I visited, children were assigned to approximately forty minute periods of clinical instruction from three to five times a week, in groups no larger than four. Severely disabled children in one school worked with a teacher for two hours every day.

Regular classroom teachers have no special training in helping dyslexic children, although they are aware of the problem. Clinic teachers in Denmark traditionally receive training through the Danish Speech Institute.

The famous Word Blind Institute, founded by Edith Norrie, is now part of the Danish school system. Miss Ingrid Vestagard, director of the Institute's educational program, outlined how this organization functions and is used. A child may become a student at the Institute if he has average or above average intelligence, has severely low reading and spelling scores, and has received two to three years of special instruction in the local school's reading clinic. The child is referred first from the school to the Danish Speech Institute which then may refer the child to the Institute.

The admitting procedure employs the WISC, ITPA, Bender's Visual Motor Gestalt Test, an auditory perception test, standardized reading, spelling and mathematics tests, and includes a thorough case history if none exists.

A child's program consists of two periods of Danish language, one period of arithmetic stressing word problems and fact learning, an otherwise normal academic school program, and gym every day with swimming therapy. Legislation provides that adult dyslexics may receive help through lessons given at the Institute at night.

Theoretical premises for teaching dyslexics dictate careful training of sound-symbol relationships and painstaking structuring of language elements. Therapists employ multi-sensory techniques, including dictation and exercises in sequencing, following directions, composition, and individualized reading programs.

I visited five schools in the suburb of Ballerup, a community created by the Danish Government for people living in sub-standard housing in Copenhagen. The population here includes many immigrant, unskilled workers from southern Europe.

Ballerup's dyslexia program is not typical of Danish towns. Administrators and reading supervisors in Ballerup are hoping to integrate all dyslexic

children into regular classrooms. There is already instruction of these children by language therapists within the classroom. It is recognized that severely dyslexic students need more help than can be given in the regular classroom, but self-contained classrooms are felt to be harmful and in Ballerup these are being discontinued.

In all the instruction I saw, I noticed techniques similar to those I had observed in the Word Blind Institute. Danish clinic teachers make many of their own materials and these were tailored to fit individual needs. Comments from clinicians reflected dissatisfaction with published materials. Clinic rooms are furnished with tape recorders, mini-tutors, and language masters. Language masters are used with blank cards. Teachers clip their own materials to the cards. One teacher made up short stories of five or six simple sentences. Each sentence was clipped o a card. The children arranged the cards in proper sequence, which the teacher checked. The child read the card into the master. He copied the entire story into his exercise book and illustrated it.

In Örebrø, Sweden, Dr. Lars-Magnus Björquist, head school psychologist, invited me to visit and observe classes for dyslexic children. He talked extensively about Sweden's program for dyslexic youngsters. Sweden is also making an effort to find adults who cannot read adequately. School systems are evaluating the handwriting skills of children. Dr. Björquist is currently engaged in formulating predictive diagnostic tests. He said that the diagnostic work, referral procedures, teaching techniques, extent of program, and management of groupings that I saw in Örebrø are typical of the whole country.

Referral is made when a child from the first grade or above displays any language problem in the classroom. The classroom teacher fills out a check list, augmented with a narrative report. The principal receives this report and refers the child to the reading supervisor and school psychologist. Diagnostic evaluation is made using the WISC, standardized tests in reading, arithmetic, and spelling; visual perception tests; an auditory discrimination test similar to our Wepman; acuity of hearing and vision tests; and a physical examination. A neurological or psychiatric evaluation may be made through the school system if needed. The results are discussed in a staff conference attended by the principal, reading supervisor, classroom teacher, school nurse, and school physician, if needed. The school psychologist leads the conference. Conferences are held once every two weeks in each school to review progress of children under treatment and to consider new referrals.

Individual programming begins at the conference level and covers children aged seven through thirteen.

The settings for re-education vary. There is individual instruction. A severely dyslexic child may have a one-to-one daily tutoring session for as long as four years. There is small group instruction daily for periods of up to an hour for groups of four or fewer. Self-contained classrooms of not more than ten youngsters may meet for all day instruction. Sometimes, children are grouped for a two hour session of language instruction only. Seven to ten children may receive instruction in Swedish, mathematics, and a foreign language. Immigrant children receive intensive language instruction.

Materials used were carefully selected for the children's needs. Commercial software and hardware, including tape recorders, language masters, overhead projectors, and a wide selection of reading materials is used judiciously. The teaching I observed relied on creative teacher-made materials and wisely adapted use of commercial devices.

I noticed repeatedly the personal involvement of gifted teachers creating a warm therapeutic atmosphere. These teachers are superbly carrying out Margaret Rawson's maxim, "Teach the language as it is to the child as he is," through numerous multisensory techniques. The attributes of organization, direction, dedication, industry, imagination, the quality and appropriate utilization of teacher-made materials, and the selection of goals in the Örebrø program for dyslexic children impressed me greatly.

Colleagues in Czechoslovakia reflected humor, warmth, astuteness, and dedication. Dr. Zdeněk Matějček, prime mover for two decades in education for dyslexic children hosted my visit. Readers of the *Bulletin* are familiar with his work.

Systematic care of the dyslexic began after World War II. Child psychiatrists supported research in this area. Studies were made, statistics gathered, learning processes analyzed, perception studied, theories formulated, and programs for dyslexics started. The course of development was surprisingly like that in England and the U.S.A.—a common problem, a common history. Exceptionally fine classroom teachers from Prague have been selected to teach children with moderate language processing problems in self-contained classrooms. There are forty such classes in Prague now. Enrollment is limited to twelve children. Regular classroom teachers here, as is typical of all the countries I visited and in the United States, have little or no background for teaching dyslexic children. Workshops, therefore, are arranged for these teachers. Three days of classes are held. After six

to eight weeks of teaching in the classroom, the teachers come back for in-service training. In 1972, the government asked for a voluntary enrollment. One hundred and fifty teachers applied, but only fifty could be admitted. Dr. Matějček was immensely pleased at the response. One of the difficulties here is in reaching the regular classroom teacher and in getting information to her. No administrator is able to call a required meeting out of school time because the workers' (teachers in this case) rights are so carefully guarded.

Dr. Matějček spoke about the level of reading that determines adequate performance. A Czech child, reading at a second class level (approximately third grade), having a vocabulary of 5,000 words, is able to read everything he needs in order to cope with daily living and to afford him some pleasure in recreational reading. He should be able to read sixty words per minute and he should not miss more than two to four words in every hundred.

The Czechoslovakian teachers I observed developed some simple but effective devices. One is a simple "window" card cut from oak-tag. It helps the child to focus on his line of reading and at the same time cuts out too much visual stimulation. I find it helpful with young children.

The indentation at the top of the card can be moved to isolate the spelling of a sound giving trouble to a child. I was particularly taken with a home made pencil holder fashioned from plaster of paris molded to the child's hand, forcing a comfortable and relaxed, but perfectly correct pencil clasp. The children paint and shellac their own holders.

I saw none of the tape recorders, overhead projectors, record players, or gadgetry typical of the American classroom; but I saw creative, colorful games, interesting puzzles, beautiful art projects, well-structured exercises based on intersensory involvement, handwriting techniques enhancing rhythm, flow and eye hand control, all fabricated by teachers.

In Vienna, Austria, I had the honor to talk with Dr. Othmar Kovarik, who is furthering the work begun by Dr. Lotte Schenk-Danzinger of the University of Vienna. This able woman began the movement in Austria to help the dyslexic child. Dr. Kovarik has developed material for use by teachers with dyslexic children and has written a book for teachers. His instructional materials are now being published in Yugoslavia, which is working hard to implement a program for its dyslexic children.

Dr. Kovarik developed a thoroughly planned, systematic program involving much dictation, the following of precise directions, sequencing exercises, and carefully formed directionality experiences. It is interesting to

note his use of graph paper for training in spatial relationships in penmanship, for directionality, for patterning, and for overcoming reversal problems.

Because of Dr. Schenk-Danzinger and Dr. Kovarik, all teachers in training for elementary school work receive an introduction to the problems of dyslexia. Teachers wishing to specialize in this field may take a lengthened course giving them a special certificate.

Dr. Kovarik said that four percent of the children are severely dyslexic while up to eighteen percent have moderate to mild involvement. Teachers here are beginning to seek out dyslexic children in the first year of school. These children began receiving help in 1973. A two year training program for youngsters is provided in government schools. After this period of time a child still needing help must seek private tutoring.

Unfortunately, it is impossible to put into one article examples of all fine teaching materials that could be adapted for use here or samples of children's work showing dysgraphia and the reversals of *b* and *d*, *p*, *q*, and *g*,; confusions such as *ie* for *ei* that occur as frequently in Danish or Czech as in English, German, or Swedish. Neither is it possible to analyze the pitfalls which occur for dyslexics in each particular language. We cannot here make a comparative study of primary educational philosophies. It is impracticable to attempt to assess new economic trends and population shifts and their impact on education in Northern Europe. But, we can recognize the sophistication of our energetic colleagues across the Atlantic in dealing with facets of language-learning differences. We can learn from their research, appreciate their concerned teaching and value their warm friendship.

Dyslexia in Europe—II

Mary Louise Trusdell

Language Therapist
Richmond Public Schools
Richmond, Virginia

Just as there is too little real communication between the various disciplines concerning specific language disabilities, so has there been too little communication between countries as to what has been done and what is being done to help the SLD child or adult. With this in mind, I attempted early in 1973 to contact several European colleagues who were involved in the diagnosis and remediation of specific language disabilities, especially dyslexia.

Many people made my experience stimulating and informative. Only limitations of space prevent my sharing with readers a wealth of detail concerning the innovative and valuable procedures these people employ. Any one visit could easily be the subject of an entire paper. It is good to know that so much is going on among our European friends and colleagues in the interest of the children who, whatever their mother tongues, seem so much like our own.

Diagnosis

Most of the diagnostic procedures I learned about were not very different from those we would find here in the United States. They included an individual IQ test, usually the WISC (in translation where necessary), and various kinds of reading tests. Some diagnosticians used spelling tests in addition; some did not. Some used tests of perception; some did not. The extent of the testing ran all the way from that of the Helen Arkell Dyslexia Centre, in London, whose Joy Pollock stated, "We're rather against testing, by and large," to the 3–4 hour testing session used by Dr. Debray in Paris.

There are two testing programs that I thought well worth reporting on, one in Wales, and Debray's in France. The one I learned of in Wales was devised by Professor T. R. Miles, Clinical Director, University of North

Wales, Bangor, who used parts of several standardized tests. He uses the Fred Schonell or Holburn Reading Tests, the Schonell or Burt spelling tests, Terman or WISC for IQ, and tests for reversals, body parts, and auditory processing. He has a special system of notation for making a summary of these test results and arriving at a diagnosis.

Professor Miles emphasizes that one needs to exercise extreme caution in interpreting test results—that some intelligence test-items require the ability to handle abstract kinds of spatial relationships, and if a dyslexic child fails this, it may simply be an indication of his special disability, not an indication of lack of intelligence. On the IQ test, for example, he feels one will not get an accurate picture by merely adding up the correct answers and getting a numerical score; he feels it is necessary to find out which test items the child passed and failed. If he had been successful in some very difficult items, this should certainly be taken into account, even if he has failed some of the easier ones. A high score, Miles feels, is an important piece of evidence, even if one is reserving judgment in the case of a low score.

In his book, *On Helping the Dyslexic Child*, Professor Miles says without qualification that he thinks dyslexia is unlikely to be detected before the child is eight. Debray of France makes a similar observation. The United States seems to be taking the lead in early detection of dyslexics, mainly because of the work of Beth Slingerland, Katrina de Hirsch, and Jeanette J. Jansky.

It is useful to recall Debray's definition of dyslexia in order to understand why he tests as he does. He says that dyslexia is "a specific and lasting difficulty in the learning of *reading*. . . ." Therefore it is not surprising that he says, "The only way to make a diagnosis of dyslexia—it being understood that the intelligence of the child is normal—is to have him undergo a standardized reading test."

He uses and recommends the Alouette test, conceived by Pierre LeFevre in 1963, which can be used for first through sixth grades. It covers only speed of reading and accuracy; it does not test comprehension. The test is composed of grammatically simple sentences, using fairly simple words. Easily confused words are included (*cordeaux*, meaning string and *corbeaux*, meaning crows). The child is asked to read aloud for a maximum of three minutes, during which time the examiner is noting errors. A formula using the child's chronological age, the number of errors, and his speed of reading gives a "reading age." Debray says, "One can thus easily judge the reading

ability of the child by the simple comparison of his results with the average performance of the children of his age." Probably many people in the field of education would not be satisfied with such a narrow definition of reading, one which tests only the child's reading speed and accuracy; but Debray has used it on more than 1000 children taken at random and has come up with some interesting hypotheses, and with the statement that one can learn the following from the test: the child's reading level, the nature of his errors, his reading speed, and under certain circumstances the "stability and resistance of the child's problem to remedial education." He claims that the test also serves as a guide for remedial education. He cautions that the test should be administered only by persons trained and experienced in its use, not by parents who suspect that their child is dyslexic. He acknowledges that while the test is short and simple, its interpretation is more complex. Its diagnostic validity rests with the examiner. For the novice or layman it may be useful as a screening test. Debray assumes that "it is not possible to make a diagnosis of dyslexia before the child is seven or seven and a half years of age." This stems from his definition of dyslexia as a *reading* problem, which leads him to assume that it is only after a child has tried to learn to read that you can possibly determine the cause of his reading problem, and from the fact that most children have not been sufficiently exposed to the reading process before age seven or seven and a half. This philosophy is akin to that held by many school administrators in the United States who maintain that the child should not be given special help with reading until the third grade, when he's had a chance to learn but has failed the first and second grades!

Important as he feels this brief test to be, Debray does not say that he can make a final diagnosis of dyslexia on the basis of a three-minute reading sample. In fact, the examination for dyslexia which he supervises as a member of the Paris Faculty of the Medicine requires from three to four hours. It includes a neurological examination to rule out brain damage and sensory defects; numerous psychological tests to determine IQ and the child's emotional stability; and, when indicated, an X-ray of the child's cranium, an EEG, and biochemical analysis. Debray says that the results of these tests are usually normal in the dyslexic child. As for those children who have "uncertain ocular movements while reading, this must be considered a consequence rather than a cause of the reading problem."

Debray knows of the work of de Hirsch and Jansky in predicting reading disorders, but he says their tests are based upon behaviors that are

183

not characteristic of all dyslexics—retardation of language, confused laterality, problems with space and time—and that these problems can exist in children who are not dyslexic, although he concedes that their tests show 90 percent predictability as to later reading failure.

He mentions work done on prediction of dyslexia by Inizan in France and Limbosch in Belgium, of which the latter shows 75 percent accuracy in predicting which kindergarten-age children will be poor readers after four years of schooling and poor spellers after six years of schooling. None of their tests having to do with body schema, lateralization, and organization in space, however, gave predictive information.

It is hard to know why Debray seems to prefer the predictive index of Limbosch to the de Hirsch-Jansky tests. Of the latter he says, "The prediction was a failure for four children selected as potential dyslexics who revealed themselves to be, in fact, normal readers." I believe most teachers would prefer to use a 90 percent valid predictive index, even if it includes a few children who don't need help, rather than to rely on one with only 75 percent predictability. The "false positives" are less likely to be hurt by unnecessary treatment than are the undetected high-risk children by neglect.

Methods

Of the various methods that are being used in remediation in Europe, I should like to report briefly on six: one Swiss, three French, one Belgian, and one Welsh.

Switzerland: The Swiss system is based on the work of Francis Kocher, who was a *logopediste* (language therapist) at the Geneva State Health Service. He had studied under Mme. Borel-Maisonny in Paris. Despite his early death in 1963, his book, published in 1959 and now in its fourth edition, is still widely used in Switzerland. Mlle. Michelle Maguard and Mme. Menthonnex, with whom I talked, carry on his work.

Kocher based his remediation principles on stimulating the child to use his intelligence and his cognition by asking him to verbalize each step in his learning, justifying his reading, writing and spelling procedures by step-by-step analysis and sequential syntheses. He must give reasons for his decisions as to grammar, pronunciation and spelling until his procedures become thoroughly familiar and automatic and he achieves independence in using language.

Although Kocher's emphases are primarily visual and auditory, he recommends the following spelling procedures, which sound somewhat familiar to users of the Orton-Gillingham approach:

a. The word is given
b. The child repeats the word
c. The child breaks the word into sounds (but does not use letter names)
d. The child writes the word.

Kocher emphasized the "discovery approach" because he believed that a child assimilates what he is led to discover much better than he does what the teacher tells him and what he repeats by rote.

And yet, when fatigue sets in, and the child begins to give erroneous replies, the teacher must persist in the face of difficulty, as this persistence is what is expected of a normal child in the Swiss school setting, and it is good for the dyslexic child to get used to it. One may simplify the question to the point where correct answers are given; then by degrees one returns to the initial question, but one must not give up! This Spartan attitude is rather different from our emphasis on positive reinforcement.

Daily tutoring sessions are desirable, but if they are not possible, then daily work at home is assigned, work which is an extension of the tutoring session. Since it is very hard for parents to help their own children, Kocher thought it better for the child to do the work at home by himself. However, when it is necessary for the parents to help the child at home, the child should indicate that portion with which he has received help so that there can be no doubt as to its authorship. The record must be kept straight.

France: I learned of two major methods in France, one inspired by Mme. Suzanne Borel-Maisonny, and the other by M. Claude Chassagny.

Mme. Borel-Maissonny's approach is primarily auditory and gestural, with special emphasis on sequencing of sounds. Little writing is done in the beginning. To reinforce the auditory modality, however, she teaches the child hand gestures which resemble the letters. For example, to teach the letter *v*, one has the child form a *v* with his hands. The child's hands are then placed over the written letter form so he can see the correspondence. If the letter is a voiced consonant, the child is taught to touch his fingers to his throat. Mme. Borel-Maisonny uses this approach with all children, no matter what their age. However, she limits it to 5–10 minutes at the beginning of the tutoring session for older children, for whom it becomes similar to a gymnastic exercise. She also uses moveable letters and, as soon

as possible, translates these exercises into writing, always using the sounds of the letters rather than their names.

Since Mme. Borel-Maisonny stresses the auditory approach, she also uses earphones to amplify sounds and to focus the child's attention on them. She uses the earphones also to focus the child's attention on speech sounds and on instructions. The child progresses from auditory sequencing, reinforced by gesture, to writing and advanced language study.

M. Chassagny's method, which is generally used with older children, approaches retraining from an entirely different standpoint. His main idea is to establish the relationship of oral to written language, and this is based on self-expression. It is done almost entirely through writing, with few reading exercises.

The two principal ingredients of the approach are self-correction, and lists of words and phrases in series. These series are composed of words or phrases which are similar in configuration, meaning, or sound. The series, initiated by the child, are directed by the teacher to lead to the generating of longer phrases and sentences. Through these the child learns the parts of speech, the ideas of plurals, of tenses, and of agreement of endings—which is much more complicated in French than it is in English because of the inflection of French verbs and adjectival endings which must match nouns. There is no systemized approach for this work; its success rests upon the skill of the teacher.

A theme for a list is often based on the interests of the child, such as hunting, fishing, the beach, the circus, etc. All sorts of words are used—nouns, verbs, adjectives, etc. They are dictated to the child with emphasis on rhythm, rather than on spelling. Later, spelling errors are used to direct attention toward similar sounds to form groups of words of similar spellings. When the child's mistakes are becoming less frequent, a freer, more imaginative dialogue can begin.

Imaginative devices to vivify grammatical structure, and the like, add a touch of fantasy and help with understanding and memory. Chassagny claims that the point of this kind of teaching is to teach technique while enriching the child culturally. He maintains that it can be expected that the child will develop an automatic response to the written word that will speed up his reading.

Here we should refer again to Debray. His familiarity with Orton's approach is apparent not only from the first sentence in the following state-

ment from his book, *La Dyslexie de l'Enfant*, but also from his suggestions for remediation which follow it:

"To Samuel Orton is due in great part the merit of having formulated the basic principles for the remedial education of dyslexics. Three adjectives can summarize three of the principles involved: (1) individual, (2) multi-sensory, (3) simplified. To these must be added (4) relief of any guilt feeling on the part of the pupil."

"Individual" remediation is stressed by Debray because it apparently has been the practice in France to put children who are behind in their work in groups called "Classes for Perfecting Extra Work." As in many other countries, the problem is that the classes are full of mentally retarded children, and so the work progresses too slowly for a dyslexic child of normal intelligence—a problem all too familiar to us, as well.

Debray's multi-sensory approach (principle 2) uses many games and devices which are almost identical with those of any effective Orton-Gillingham type of approach. Straightening out b-d confusions in France presents much the same problems as in any other Roman-alphabet country, for example.

In order to simplify the dyslexic's remedial program (Debray's third principle), he recommends two well known pedagogic strategies: going from the simple to the complex and going from the known to the unknown, checking each time to be sure that the previous learnings are secure. It is specifically important to study first the letters, then syllables, and finally words and phrases—this, he points out, being the opposite of the "global" method. "At each stage one approaches only one difficulty at a time, always utilizing the multi-sensory associations. One gives little or no explanations, no grammar rules, the goal being to acquire by repetition, just as the pianist does with scales, an automatic response without which reading is not possible." In this respect his view contrasts with that of Kocher.

To help with the relief of guilt feelings (principle 4), Debray parallels Miles' belief concerning the importance of the atmosphere established by the tutor-therapist in a warm, relaxed remedial situation. The tutor encourages the child and gives him a sense of confidence by emphasizing his progress, however small its steps may be. Remedial education is long and progress is slow. Courage and patience must be the watchwords.

It is unfortunate that there has not been better and more recent communication between Debray and the United States, for his experiences in successful diagnosis and remediation have not duplicated ours. He not only

doesn't expect miracles; he doesn't even expect what we would call success.

Debray's background in psychology and medicine, rather than pedagogy, may account for his lack of awareness that remediation must be given at least three times a week, and for more than a few months, if one is to see long-lasting results. He states,

> Our preliminary results based upon 48 dyslexics with IQ's above 90 who were given the Alouette test before and after their remedial education are with very rare exceptions modest from the reading standpoint. After a remedial reading program that averaged *ten months in duration* (italics mine), with lessons *once a week* (italics mine), the average progress was seven months. There still remained a spread of about three years between the chronological age and the reading age. . . . No doubt they are creating many fewer errors and they give the illusion of knowing how to read. Nevertheless this reading is . . . accomplished with a very sustained attention—indeed, with a finger on the text. But the easy, fluid, automatic reading which is indispensable for normal school usage has not been acquired; the reading is slow and there are considerable spelling difficulties.
>
> Of course it is better to be able to read badly than not to be able to read at all. Also the benefit of the re-education must not be judged just from the point of view of the reading progress made, but also from the affective point of view. We have found that in two out of three children who underwent reeducation (32 out of 44 cases), there has been rapid disappearance of their behavior problems. And this has taken place in just a few weeks.

The psychotherapeutic results are excellent; the pedagogic principles are sound, and should result in more measurable progress, if only the tutoring sessions could be more intensive and more frequent.

Belgium: de Heer Emile de Bie is psycholoog-directeur of the Medisch-Pedagogisch Instituut at "Marienhove" in Brugge (or Bruges), Belgium. Because my visit with de Heer de Bie was a memorable one, I will include here a more detailed summary of his relationship with Marienhove and how it developed, along with an abbreviated account of the methods he uses with the children at his school.

de Heer de Bie's dynamic personality and his deep love of the children and his school were immediately evident. I was not, at first, surprised to see him dressed in a sport shirt, the sleeves rolled up to his elbows. With his wavy iron-gray hair, he could have been any business man enjoying the challenge of running a country estate; but then I found that he is, instead a Capuchin monk!

de Herr de Bie began the school about sixteen years ago (1956) with

Mlle. Marie-Luise Demeere, a logopediste. He had studied psychology in Leuven, Belgium, under Professor K. Swinnen, who was well-acquainted with Orton and his work, at Katholieke University. When de Bie returned to Bruges, he began working in child guidance as the first psychologist the city had had. There was then no help in the Flemish part of Belgium for children with language and psychological problems.

At that time, Mlle. Demeere was a trained logopediste—one of the first in Belgium. She and de Bie met at a conference called to discuss the plight of these children. He had already decided to begin a school when Mlle. Demeere invited him to her family's country home, which was Marienhove. Immediately the need for a school and the availability of her family's country home for such a purpose conjoined to bring about the establishment of the Instituut at Marienhove.

Marienhove is a fifteen-acre residential school in a suburban, almost rural setting outside Bruges. It accommodates about 100 children, 3–14 years old, with normal and above normal intelligence, who have any of the following problems: specific academic deficiencies as in dyslexia and dyscalculia; language and speaking disorders, such as aphasia and retarded language development; and personality problems, such as neurosis and prepsychoses.

The school is composed of nine groups or "families" of ten to thirteen children each. Different ages are grouped together, to simulate more closely a real family situation. Each group has a housemother.

The "families" are regrouped by age and academic need into schoolroom classes of 12–14; into units of 5–6 for therapy (occupational or language) or are sometimes taught individually; while for recreation they are grouped according to age and interests.

de Heer de Bie's background as a psychologist is probably largely responsible for the thrust of his approach in helping the children at the school. The children do not study spelling and reading at first, contrary to what Kocher recommends; instead, they have exercises on concepts such as above/below, greatest/least, etc. Some have this training for a few weeks, some for two years (but one must remember that de Bie takes children whose problems run all the way from developmental dyslexia to aphasia).

de Bie, too, believes in employing all the senses. The children step out the letters and feel the shapes of letters while working on their sounds. (Incidentally, phonics is easier in this part of Belgium than in the French-speaking part, for Flemish is largely regular phonetically.) Much of de

Heer de Bie's work is parallel in method and result with that of my other European informants and with our own.

Wales: The Welsh children can run into a bit of a problem immediately when they begin to learn the alphabet, for they live in a bilingual society —Welsh and English. Their English alphabet begins "ay-bee-see," while the Welsh alphabet is pronounced "ah-ber-ker." Some of the children—those who live some distance from the cities—hear only Welsh until they begin school. Of course, this increases the difficulities of those who have dyslexic tendencies.

Professor Miles in Bangor has devised an approach to helping children with reading/spelling/writing problems. He has detailed this in his book *On Helping the Dyslexic Child* (a highly recommended volume—see review in *the Bulletin of the Orton Society*, Vol. 23).

Materials

A whole paper could be devoted to the original and effective materials in use at the European centers it was my privilege to visit.

Especially creative original materials are those devised by Agnes G. Wolff of Bath, England. Herself a specific dyslexic, she brings to her work as language therapist an unusual amount of insight, as well as the creativity of an artist and designer.

She says of her own way of looking at the world, "I seem to think mainly in three dimensions, or in pictures, or diagrams and color. Words seem to have little to do with such thoughts. To shape thoughts into words for communication is laborious and like putting them into a straight-jacket, which leaves so much out. Verbal skills are quicksands when you cannot hold enough of a concept verbally to juggle with the pieces and put them in a sensible sequence. I have begun to see that shaping thoughts in words is not unlike shaping and putting together the pieces when designing a house or other structure."

Her "Finger Cap Puppets" and her many other teaching aids are delightfully imaginative and pedagogically "just right" for dyslexic youngsters and teen-agers.

The Helen Arkell Dyslexia Centre in London has also developed some excellent materials. For example, they have adapted Edith Norrie's Letter Box, used at the Word Blind Institute in Copenhagen, Denmark. Arkell's

adaptation is now available commercially in England as the "Letter Case" with a teaching strategy based on speech theory.

The greatest assortment I saw of commercially produced materials was at the Torphichen Education Centre in Edinburgh where Miss Dickson was my guide. In addition, children at this center construct elaborate castles, scrapbooks, murals, maps, etc. Even so, Miss Dickson said, "It's 'talk and chalk' that counts, in the actual teaching and learning of reading."

My experiences in Europe are of a piece with those of other visitors to the many centers which have an interest in the problem of dyslexia. Whatever the language and wherever the learners, the phenomena of variation in aptitude and the resultant problems have much in common. The effective approaches to diagnosis and educational treatment are similar. Most important of all, the people involved have a common bond in their intelligence, competence, and kindly concern. I feel privileged to have shared such rewarding and productive hours of my European journey with so many of them.

Awards Presented by the New York Branch of the Orton Society

At a dinner meeting of the New York Branch of the Orton Society on March 22, 1974, awards were given to two well-known scientists who have contributed to meeting the needs of children with language and learning difficulties. The citations were presented by Katrina de Hirsch, former Director, Pediatric Language Disorder Clinic, Columbia Presbyterian Hospital, New York City, to Dr. Herbert Birch, posthumously, and to Dr. Lauretta Bender. It seems fitting that the words of her presentation should be shared with the Bulletin's readers.

—Editor

The Orton Society is devoted to the welfare of educationally disabled children. It is fitting that the first two awards bestowed by its New York branch go to two great scientists: Dr. Herbert Birch, posthumously, and Dr. Lauretta Bender. Both have contributed immeasurably to our knowledge of the vicissitudes of children's development.

In the name of the Society, I would like to say a few words about the enormous debt we owe to these two people.

If one surveys the contemporary scene, one realizes that the area of child development has been significantly shaped by the contributions of Dr. Birch and Dr. Bender. Indeed, so much of what they have created has become part of our thinking and feeling about children that we are apt to forget where it originated.

They have looked on phenomena in different ways, but I feel that they have, nevertheless, certain traits in common. One might place them under the term *devotion*: devotion to their task, which means being delivered to the relentless forces that drive the highly gifted to give of their very substance; devotion to the children they serve and the conviction that ultimately science has vital implications for social action.

Herbert Birch's life work and the number of phenomena he investigated are so numerous that it would be impossible to list them here. Just the titles of his papers cover nearly twelve pages, to say nothing of his books. He was an epidemiologist, an expert in nutrition, neurology, obstetrics, and

pediatrics, and he made a highly significant contribution to cognitive psychology. His deepest concerns were in the areas of the mechanisms underlying behavioral organization and the social, cognitive, and behavioral consequences of poverty and bias. He was—and maybe this is what I most admired about him—a deeply committed man. As Dr. Leon Eisenberg said in a beautiful eulogy, "His was an ethical imperative that moved him to serve as advocate of the disadvantaged and the victimized."

I cannot claim that I knew Herbert Birch well. Frankly, I was overwhelmed by his encylopedic knowledge and his razor-sharp scientific tools. I saw him at meetings: we were both consultants for the King County Study on Prematurity; I sat with him on several panels. I listened to his lectures when in front of one's eyes he built a complete conceptual structure as a framework for his experimental findings—all without reference to a single note.

It was Birch who cut through the old controversy that pitted the genetic camp against the environmental one on the subject of disadvantaged children's poor academic performance. He said, "disadvantaged children's physical health and their intellectual potential are at risk even before birth and their failure is virtually foreordained. Malnourishment, illness, and poverty going back for two or three generations results in reproductive risks that may *mimic* inferior genetic endowment."

Birch was an extraordinary person in many surprising ways. When I once told him that I had trouble getting close to little boys between the ages of seven and twelve—one can't cuddle them any longer and one can't talk to them yet—he laughed and said, "Of course one can't; one needs skills." He had them all. He could build a violin or a boat and he could play the trumpet and he was a star in sports. He could be abrasive at times and he did not suffer fools gladly. But he was basically generous.

I shall always be grateful for the trip from Dallas to New York City, not quite eighteen months ago. We shared an afternoon at the University of Texas discussing learning disabilities. It was the last time I saw him and it was on this flight that I got a feel of what the man was like. He told me about his mother. She had total faith in him and was clearly convinced when he was seven that there was literally nothing he couldn't do. She was right.

Like all men and women, Herbert Birch had known grief, but he sounded like a deeply fulfilled person. He spoke of his brilliant wife with such admiration and tenderness, and with something akin to awe and

enormous amusement about his extraordinary little son. One doesn't expect to be moved on a flight from Dallas to La Guardia, but I was.

The other day I saw one of Herbert Birch's close friends and colleagues, Dr. Ira Belmont. He said "Herb is irreplaceable." I am sure it is true.

I now speak of *Dr. Lauretta Bender*, and with a sense of delight because I simply love her. She was closely associated with Dr. Orton from way back when she worked as his teaching and research assistant in neuropathology at the University of Iowa, even before she took her medical degree. She is one of the founders and a faithful friend of the Orton Society and a recipient of the Samuel T. Orton Award.

In her work, she has given Orton's important insights an entirely new dimension, a depth which goes beyond the problems of children's language disabilities and which provides a view of central nervous system functioning that includes both pathological and normal phenomena. Her concept of plasticity is, moreover, the only valid explanation of that curious and rare species, the genius.

Lauretta Bender is a highly creative, highly original person. She is also a superlative clinician. Thirty-two years ago when I first came to this country, I sat in her weekly conferences at Bellevue for a month. This was, alas, the only opportunity I had to learn from her directly. One day I saw her examine a child. She pulled him onto her lap and literally felt him all over. I have never seen anything like it before or since. When she was through she knew he was schizophrenic. It proved to me something that I had always known: a great clinician is born not made.

Lauretta Bender has been famous for a long time and her Visuo-Motor Gestalt test is an indispensable tool in the armarium of the clinician and research psychologist. Nevertheless, I believe that people are only now beginning to understand the implications of what she has been talking about for such a long time. Maybe her use of certain terms is somewhat idiosyncratic. She has created her own language and one must get inside it to understand what she is teaching. That, too, is the hallmark of this creative person: fashioning her own instruments. Her view of central nervous system functioning, which has been influenced by Schilder and by gestalt psychology, has stood up in the face of the deadly fragmentation and computerization which is typical of so much scientific work today.

Lauretta is hopelessly and incurably modest. Three or four years ago she asked me who first had put forward the concept of maturational lag.

I was amazed! Way back she had looked at her schizophrenic patients and at Orton's youngsters and it was *she* who had described the phenomenon underlying both: a primitivity of organizational schemes which she had termed maturational lag. In the Orton population, this is confined to the perceptuo-motor and linguistic areas, while in the schizophrenics it pervades the total personality organization.

Her many students and colleagues (and I hope I can count myself one of them) have been immeasurably helped by her perceptive clinical and scientific formulations. I am thrilled every time I reread some of her 250 papers because of their immense originality.

But she is original not only in her own field. Several years ago I sat with her on a panel in Philadelphia. We were both bored, so I suggested we leave and visit a French impressionist exhibition that had just come into town. The very first painting we hit was the red-coated little boy from Manet's Spanish period. Lauretta had one look at him and gasped: "Don't you see? He is schizophrenic." She was right; he had that cold, empty look. I had always felt it but had never given it a name. I remember another occasion when she and my husband and I went to see an old glorious Charlie Chaplin film. It was delightful.

Lauretta is a deeply human and a very courageous person. She, too, has been visited by grief; she has been bereft twice. But she goes on working, giving, spending herself. She continues as Professor of Psychiatry at Columbia College of Physicians and Surgeons, which is fortunate for me because it gives me a chance to see her occasionally at staff conferences.

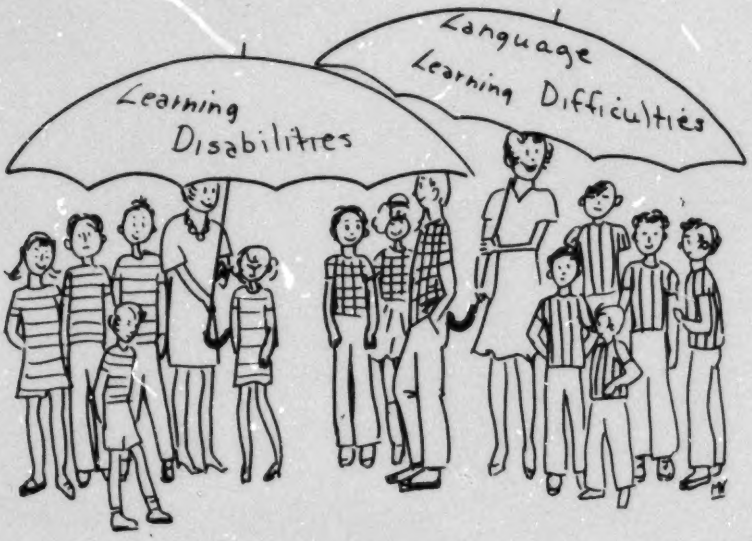
The history of the behavioral sciences, the children she continues to serve, the people she teaches, all owe her an enormous debt. All I can do tonight is to express the profound gratitude of the New York Branch of the Orton Society for what she is giving so freely and so very generously.

Semantics$_{1974}$—What is S.L.D.?

The other day we heard a friend say, "If I had a quarter for every time I've tried to give a sixty-four second answer to that sixty-four dollar question, I'd be a rich woman!" A picture is worth a thousand words? Here, then, is an essay on the relationship of specific *language* disability (the first SLD in the field) and specific *learning* disability (the more recent contender for public attention and understanding), as Marilyn Yost, the artist, depicts the author's conception. Perhaps, though, we should beg the whole question by saying

Some Learn Differently

—MBR



REVIEWS

The Review Editor and the Editor are jointly responsible for all reviews except those that are initialled.

The Shape of Intelligence: The Evolution of the Human Brain, by H. Chandler Elliott. Illustrated by Anthony Ravielli. New York: Charles Scribner's Sons. 1969.

For those readers who always wanted a better understanding of the "little black box," take heart! The author, a professor of anatomy, neurology, and psychiatry, has simplified the process into a readable style with such delightful personalization as The Janitor in the Body (the autonomic nervous system), Grade School of the Mind (the sense of smell), The Worm in Your Spinal Cord (the reflex basis of action), The Computer in Your Brain (the cerebellum and muscle teamwork), and other chapter titles. A Glossary of terms and especially fine illustrations complete the education you will get when your trip through these pages. Accuracy and comprehensiveness have not been sacrificed in translation to clear English. A beautiful book!

* * *

Communication, Language and Meaning: Psychological Perspectives, edited by George Miller. New York: Basic Books. 1973.

This is a publishing event of first order importance to those interested in the science of language. The editor, George Miller, of Rockefeller University, was first able to put together a broadcast program of 25 half-hour lectures by almost as many scholar-scientists and then to persuade them to agree to publication of their talks in language of exceptional directness and clarity. The chapters are written so well that, even without tables, graphs or other illustration, each carries clear meaning at about the same "intelligent-layman" level. There is no debased currency here of the kind which "popularizes" at the expense of accuracy of information and personal style of authorship. Rather, every writer has translated from the terminology of

his scientific field into clear and generally felicitous English prose so that the reader feels after finishing each article that he or she now has an improved grasp of the basic premises and current state of that part of the field and a feeling for the individuality of the author. As an editor, this reviewer recognizes here a particularly fine example of competence in the editorial process!

In content, the component papers range from animal communication through the nature, origin and development of speech and language in the human race and the human individual as listener, speaker, reader, writer and thinker, and as purposeful user of modern communications technologies.

The authors come from many different fields, with psychology and linguistics especially well-represented, anthropology and genetics missing, and doctors of philosophy far outnumbering those of science and medicine. Such familiar names as Lenneberg, Chall, Geschwind and Alvin Liberman are among the contributors. If someday a master-student-thinker-writer (perhaps Dr. Miller himself) gives us in a single work the definitive "Intelligent Layman's Guide to the Science of Language," perhaps with a long, explanatory subtitle, he will find models for both content and style in this excellent volume.

Reading About Language, by Charlton Laird and Robert M. Gorrell. New York: Harcourt Brace Jovanovich. 1971.

This almost 500-page paperback collection contains a wide range of papers designed both to arouse and to inform the beginning but serious reader about language, from the biological, psychological, historical, semantic, linguistic and sociological angles. Some are profound, like Suzanne Langer's "Apes and Wild Children," or Robert P. Stockwell's "The Counter-revolution: Generative Grammar"; some are practical, like Part 6 on "Usage"; some are, on the surface at least, light and amusing, but with points to make, like Thomas Kochman's " 'Rapping' in the Black Ghetto,' " or Sir Ernest Gowers' "Backlogs, Bottlenecks and the Choice of Words." Each of the several dozen articles is short, and their varied fare should nourish any college or graduate student of language.

Language Awareness, by Paul A. Eschholz, Alfred F. Rosa, and Virginia P. Clark. New York: St. Martin's Press. 1974.

After reading this book, no one will continue taking our language for granted, for he will see the effect of his language on others, and how their language is used to classify, dehumanize, deceive, elevate, or control *him*! Press releases, children's lore, police slanguage, patient-dentist semantics, euphemisms and semi-literate Shakespeare are but a few of the examples provided from such writers as Lincoln Barnett, George Orwell, Art Buchwald and H. L. Mencken. It is also as widespread as Cut 'N Shoot, Texas, as current as Bunkerisms and Ger-person-y for GerMANy, and as catchy as Nestea, America's favorite instant. Dull your students will never be after exposure to this!

The Story of Writing, by William and Rhoda Cahn. New York: Harvery House, Inc. 1963.

The authors, with the aid of profuse illustrations, maps and interesting text, illumine our knowledge of written communication from cave art to the computer, through such examples as the alphabet, Sequoya's syllabary, and printing machines. Such enlightenment for students is sure to lead to more exploration of the many sources listed at the end of the book, and to further elucidation and enjoyment! This is a shorter, somewhat simpler treatment than Folsom's *The Language Book*, for use in similar circumstances.

Developmental Sentence Analysis: A Grammatical Assessment Procedure for Speech and Language Clinicians, by Laura L. Lee. Evanston, Illinois: Northwestern University Press. 1974.

Sound linguistic science and psychology of language development, clinical understanding, and a well-designed, thoroughly tested and appropriately validated diagnostic test of language development in young children make this an intellectually challenging and practically useful book for the expert clinician. The concern is with the child's normal or delayed or distorted growth toward a fully competent use of grammatical structure and, hence, his command of expression primarily in standard English and its underlying thought processes. An excellent work for the professional enlightenment and use of those concerned with basic language from first speech to about age seven.

Relative Frequency of English Spellings, by Godfrey Dewey, New York: Teachers College Press. 1970.

A student of the pronunciations of graphemes (as in reading) or the writing down of phonemes (as in spelling), should study this small book well. It extends the author's work of 1923 on the ways in which writing is decoded to speech, and further analyzes his own earlier statistical study, and that of Hanna et al., of the probability with which each of the sounds of English speech (40 to 48 of them) is likely to be spelled. To the Hanna count of the number of *items* in which each spelling occurs, Dewey adds the number of *occurrences* of each spelling in the same corpus of running words, thus taking account of the commonness of each spelling. There are other refinements, and some discussion of proposals for simplifying spelling. These proposals are based on the pronunciation-representation problem, neglecting the semantic implications of morphemic form. The book adds to our understanding of the code aspects of our written, and read, language. It is fundamental building material; the use we make of it will bear further development in philosophy and practice in the light of other aspects of linguistic understanding and pedagogical method.

Variant Spellings in Modern American Dictionaries, by Donald W. Emery. Revised edition. Natl. Council of Teachers of English. 1973.

The author has examined five common desk dictionaries published from 1968 through 1973, listing their multiple spelling of about 2400 words which are to be expected in the writing of literate adults. He gives the first entry (not necessarily the preferred spelling, but not a secondary one) in each dictionary for each word and notes in which dictionaries each admissable variant occurs. He discusses groups of words in which variation is common (-able/ible; or/er; treatment of final consonant and final e, etc.) The origins of the variations (British/American forms, etc.) are discussed, as are the uses to be made of the list and the attitudes which it should engender. As an arbiter of disputes, rather than a primary teacher of spelling, and as a cautionary note against dogmatism, this book should be useful.

Miss Thistlebottom's Hobgoblins, by Theodore M. Bernstein. New York: Farrar, Straus and Giroux. 1971.

The author hopes that such an unpronounceable and unmemorable title will be difficult to forget, and that some of the bogies passed on by editors and writers from generation to generation can be dissected. He strives to show the proper usage according to a legitimate code governing grammar, usage and style, striking a happy medium between being too cramped and too wild. Word lovers and careful writers will enjoy the humorous logic *in back of* his explanations (but he says that to use *behind* is better and more economical!).

* * *

Children with Learning Problems, edited by Selma G. Sapir and Ann C. Nitzburg. New York: Brunner/Mazel. 1973.

This is a particularly valuable book because it goes back to the root sources of several views of life and of child development, and forward to the implications and applications of deep theory. Gesell, the Freuds, Erikson, Piaget, Chomsky, Luria, Hebb, and Werner and Kaplan set the stage. Learning disorders, language development, diagnosis, and medical and educational approaches to children's needs are considered from the several points of view including those of Bruner, Bender, de Hirsch and others well-known to readers of this review, culminating in an excellent presentation of the editor-authors' own developmental-interaction approach to education which seems sound, well-reasoned, comprehensive and convincing.

This reviewer would generally use the volume, which is by no means popular-level reading, with serious students at the graduate level. She would find it incomplete without the addition of Samuel Torrey Orton's 1925 paper, some attention to Lloyd J. Thompson's 1966 book, and June Lyday Orton's chapter on the Orton-Gillingham Approach from Money's *The Disabled Reader*. These, too, represent a stream of thought on the level with the others, from basic theory to practical outcome, which should not be neglected or treated derivatively. But the book is already long and expensive, so one should not be too demanding. It *is* excellent, however, and highly to be recommended.—MBR

The Psychology of Learning and Reading Difficulties, edited by Harold A. Solan. New York: Simon and Schuster. 1973.

This paperback of more than 400 pages is excellent provocative reading for the serious student; it includes a broad professional representation of articles from periodicals and some chapters from books, all by recognized authorities. Contrasting views are presented, with much clarifying data on previously-confused issues. The book has five sections: Reading Readiness; Visual, Auditory and Speech Correlates; Physiological and Neurological Correlates; Perceptual and Psychological Correlates; and Disadvantaged Children. Dedicated to the late physician, scholar and humanitarian, Herbert G. Birch, the book's relevant selections, representing various shades of thinking, will surely aid the educator and clinician to recognize, diagnose and treat the child with a learning disability more effectively.

Classroom Psychology, by Ruth Fishstein. Brooklyn, N.Y.: Book-Lab. 1973.

A 70-page paperback. It is always good to see sage advice given in not too many plain English words, with brief, realistic examples and practical suggestions on general management for the embattled classroom teacher to follow for her own and her children's liberation. There is help for developing understanding of individual children's learning and non-learning, behavior and misbehavior, emotional responsiveness and distress—good advice for Everyteacher with not quite Everychild and very usable and valuable as far as it goes. Missing seems to be the realization of the existence of the ubiquitous child with the pattern of specific language learning difficulties which cannot respond to the "corrective reading" kind of techniques here suggested. There is much that the classroom teacher can do to alleviate this child's headaches and heartaches, too, and her own on his account, but first his existence must be recognized and the availability of really appropriate procedures for his help needs to be known.

Particularly helpful in this small volume is the final section on the teacher's own needs as a person. It should perhaps be placed last, as it is, but it might well be *read* first. With all the varied demands for the teacher's development made by the necessity for dealing wholesomely and constructively with each year's roomful of children, the author's appreciation of her may help her to understand herself, too, as a very human person with needs for love, practical assistance and approbation such as she gives her children, the while she continues on the road to professional competence and personal growth.

This is a useful and encouraging book to read. Its soundness and its humanity of attitude need to be extended by greater awareness of "our kind" of children and the special ways one can give them the help they, like all children, need from their teachers.

Something's Wrong with My Child, by Milton Brutten, Sylvia O. Richardson, and Charles Mangel. New York: Harcourt Brace Jovanovich, Inc. 1973.

The trio of authors, a psychologist, a pediatrician, and a writer, here show parents simply and optimistically—for what is wrong *may* be easily correctible—how to diagnose a learning disability in their child and what to do about it. Their case studies note that "learning disabilities do not impair intelligence." Specific resources for services are given, and expectations of the neurologist, optometrist, speech therapist, and school personnel are pointed out. Implied for teachers reading this book is the need for educating this kind of child on a functional level, rather than just by age and grade placement. Since about three-fourths more funds in the U.S. are devoted to research on tooth decay than on learning disabilities, the challenge is clear, and made clearer by this helpful primer for parents.

Square Pegs, Round Holes, by Harold B. Levy. Boston: Little, Brown and Company. 1973.

Dr. Levy, a pediatrician, in this concerned volume about learning-disabled children in the classroom and at home, salutes the eight million "square pegs" in this country for their courage and determination, and also their parents and teachers. Chapter headings are all-too-familiar quotations, the implications of which are illuminatingly examined: "Leave him alone, he'll outgrow it!"; "He must be mentally retarded"; "He has an emotional block"; "See if he has brain damage"; "Let's go back to good old phonics!" and "Don't put that child on drugs!" Simply written for easy understanding, the book suggests tests for parents and teachers to help them realize their child's problem at an early age, and recognize and remediate its symptoms.

* * *

203

The New Illiterates: And How to Keep Your Child from Becoming One, by Samuel L. Blumenfeld. New Rochelle, N.Y.: Arlington House. 1973. An essay review by Margaret B. Rawson.

My reactions to "The New Illiterates" are mixed. I find it both stimulating and disappointing on both the intellectual and the emotional dimensions. I think it has potential for awakening the public, for partially misleading people unversed in the field, and for arousing not only expectable anger but an unnecessary degree of resentment in quarters where this will be counterproductive to the end the author has in view—the improvement of conditions surrounding the education of American children in literacy. I wish it were better, but maybe it had to be the way it is.

The remarkable thing is how much Blumenfeld has found out in so short a time—two years as a substitute teacher and a comparatively brief but intensive period of search into the literature and other sources of information. To fault him for doing vigorously what he sets out to do instead of what one would rather have had him do is to show the same limiting attitude one decries in him. He has worked with enormous drive and attempts to be both thorough and comprehensive, and he writes well (that, he says, is his major profession). His study and observation go far in several directions, giving us insights and some important new information on pedagogic history and methods, and showing up aspects of commercial motivation. No wonder he is angry. Those of us who see the children who are the badly-taught victims of the situation he describes, and who talk with their elders, both in and out of school, can easily empathize. Should we then drop everything else and join his militant crusade to save the children and the nation by changing the schools—his way, and at once? With the zeal of a new convert, he would say so, I am sure.

The evidence I have been seeing indicates that he has come to some important and right conclusions—a long stride, even if not the whole way to what would seem to me to be wisdom. He points out that in teaching English as an ideographic language we are throwing away the enormous advantages of the alphabetic principle; not a new idea, as he knows, but he puts it clearly. We are also being unrealistic about how human beings learn skills and what the relations are between the skills and the purposes and understandings which justify and promote their mastery. Both the hold-out opponents of what Chall calls the code-emphasis-to-begin-with and their generally muddle-headed and linguistically uninformed "analytic phonics" compromisers ("we do so teach phonics—just look at our new readers") are

failing to "teach the language as it is to the child as he is" because they know neither the language nor the child, as human being or as individual. A drastic change in teaching would save a lot of academic lives and I am all for it. But, like all new converts with the fanatic light of TRUTH burning in their eyes. Blumenfeld can see only what he can see, and it is in many ways an oversimplified view, with a lot of black-and-white judgments. He is ruthlessly and single-mindedly forging in the generally right direction, leaving as corpses many whom he might better have as his friends and collaborators. Often he misunderstands their motives, as in some instances I know. He tends to paint *all* of his enemies with the same brush of scorn and cynicism, even though he sometimes thins the paint a bit.

He quotes Anna Gillingham well and to the point. However, his approval of Samuel T. Orton's 1929 (of which date he sees only some of the implications) discussion of the sight-word method of teaching as wrong for children with tendencies toward language learning difficulty is tempered by a somewhat cynical misunderstanding. Orton, with scientific restraint and speaking to teachers from a profession outside their own, talks only of what he *knows*, and does not make a sweeping judgment regarding *all* teaching for *all* children. Blumenfeld implies that Orton took this stance because he wanted his paper published in a journal edited by Harold Rugg (progressivist) and with Arthur Gates (of the Reading Establishment) on its board. Too bad, Blumenfeld suggests, that Orton had not the Blumenfeld knowledge and courage. How little he knows of the character these men and the relations among them. Perhaps I am expecting too much, based on the Orton, Gates, and Rugg and their contemporaries who I saw in action when Blumenfeld was still an infant, or perhaps just learning to read. He says that someone too close to the subject could not have written this book, and I suppose he is right. I prefer accuracy, but it is passion that sways multitudes, and that is his consuming self-appointed task.

Perhaps, also, I dislike being misunderstood, myself. In my book I described as fact the method used in the school I was studying, offering no judgment about it. The other children were learning; I was talking here not about them but about the special group under study. Of course Blumenfeld knows (!), as I did not and do not, that it was the method of which he has inferred (wrongly, as it happens, but he could not know that) my advocacy, which really caused all the "dyslexia"—just the teaching method, nothing else, at least nothing else that he can see. Perhaps he is equally lacking in understanding in some other cases?

What is more, I know many Establishment teachers, leaders and writers with whom I disagree heartily but still like personally and whose professional motives and ethics I respect. There are, of course, some reprehensibly self-serving egoists among them (as there are some narrow dogmatists and coat-tailers in other groups), but mostly they are professionally honorable. William S. Gray and his pedagogic progeny—and John Dewey himself on reading—were wrong, I think, with the consequences Blumenfeld analyzes, but calling them the Bad Guys serves a dubious purpose.

Blumenfeld is often right in his assessment of history, and we are in his debt for the discovery of the Gallaudet influence, (the sight-word method, appropriate for the deaf, generalized to all children). His appraisal of the magnitude of the "new illiteracy" disaster is not overdrawn, even when it is highly colored by the intensity of emotion we all have felt. Still, there are areas of perhaps not surprising superficiality in his quick-found knowledge—I could tell him of some feet of clay among his partisans. There is one large area of ignorance, a place where he brushes off as nonexistent something he does not seem to understand.

Of the problem of dyslexia as a definable component of the range of human differences and as as aspect of "the reading problem" he seems to have little real concept. He lacks the background for understanding, and you can't blame him for that; most of the world is with him. It is not easy to get when you are a student of the subject, and certainly not on a crash basis when you are investing most of your attention and energies in other directions. He also lacks what it takes—is humility part of it?—to know that this is not the simple matter he thinks it is.

His analysis of reading textbooks has a lot of merit and potential usefulness, as far as it goes, and that is much further than most. Bad as many of them are, I could wish he had not said of them, time after time, "Can cause associational confusion, dyslexia, strephosymbolia, and other reading disabilities." All right, let's expel Dick, Jane, Alice and Jerry and some of the others from our first grades, though I'd rather keep some of their handsome later volumes on the library shelves for individual reading after one knows how. It's the primers, the method and the beginning vocabulary our children, and we, their teachers, could do without.

Meanwhile, Blumenfeld has an outline fairly consistent with the structure of English for "teaching your child at home," since he has to admit you can't change the world right away. Some parents could, but I have seen others, in the days of Why Johnny Can't Read, founder on the shoals

of which Blumenfeld seems hardly aware. Better to chance them than to stand helplessly on the shore? Yes, that may often be so.

The future, the country over, looks dark to Blumenfeld, who quite understandably wants results "day before yesterday," and is unimpressed with the "25% of our schools" who are now "teaching phonics," since Flesch and Chall. A quarter of all the schools, if he is right, though the picture seems to me far from clear-cut, is a lot of schools! From other evidence than his, I think the winds of change are blowing. Whether his book will whip them up or will provide cross-wind turbulence, I wonder. If the book "catches on," we shall see. I'm glad the book was written and that I have read it, for it will probably stir up some fruitfulness—along with some very muddy and bitter waters and perhaps a few tornadoes. One needs to know what is going on.

The rest of us will continue our, I hope, unfanatical way toward solid progress in providing for people at the dyslexic end of the population and in doing a better job of teaching Everychild to read and to use the other skills of literacy as basic tools (only tools) of genuine education, for which they are absolutely necessary, but by no means a sufficient condition.

Teaching Them to Read, by Delores Durkin. Boston: Allyn and Bacon, Inc. 1974. (Second Edition).

This readable methods book for teaching in the elementary school has a wealth of information about many approaches, examples from a variety of materials, ideas for extending listening and speaking vocabularies, and three chapters on comprehension, including content subjects and study skills. Ways of handling diagnosis, as well as a presentation of so many specifics, make this a fine overall picture of what is available to be done, and to be done with, in the field of reading.

Remedial Reading, Classroom and Clinic, edited by Leo M. Schell and Paul C. Burns. Boston: Allyn and Bacon, Inc. 1972.

The varied articles in this ample paperback show that much of today's remediation is not just "more of the same." In the section on How the Child Got That Way, Janet Lerner in "A Thorn by Any Other Name:

Dyslexia or Reading Disability," gives diverse definitions of the term, and the implications of the differences of the medical and educational perspectives. She encourages better channels of communication between the two. Gladys Natchez asks, "Is There Such a Thing as Dyslexia?" and concludes that it would be sensible to view the reading difficulty as a symptom which may be due to a variety of factors. Tests of many kinds are reported on in Learning More About the Child; and, in Creating a Learning Environment, Jo Stanchfield lists among her strongest impressions from interviews with boys about their reading interests the increasing hostility and defensiveness of low achievers in grades four through eight. The implication here is renewed effort in analyzing deficiencies and developing reading skills before the middle grades.

A Parents and Teachers Guide to Learning Disabilities, by Martin S. Weiss and Helen Ginandes Weiss. Yorktown Heights, N.Y.; Walter Goodman, Center for Educational Services, BOCES. 1973. $4.00.

Subtitled both "A Practical Guide to Activities Which Interest and Instruct Youngsters" and "A Practical Home-School Cookbook," this is a mental health and layman's or inexperienced teacher's handbook suitable for use with any child but likely to be particularly helpful to adults dealing with children who are having some difficulties in learning, in either preschool or early school years. Maybe if these preventive or first-aid techniques work, you won't need to "call the doctor" (or specialist) but can do it yourself. Maybe, maybe not; be optimistic but not over-confident or blind to the need for the expert. The activities and games are constructive and, mostly, susceptible to the appropriately light-hearted touch. By giving the adults positive, pleasant things to do and confidence that they will help the child, the approach can go far toward allaying undue anxiety, and that, in itself, is therapeutic for all hands. The activities go on into some structured, elementary phonics and simple arithmetic.

In general, the book promises to be a useful one, although the "M&M Therapy," or payment in cash, approach which the authors advise, and use with their own children, while it may "work," seems to this reviewer to put emphasis on extraneous rewards which is unnecessary to promote learning and (call this prejudice if you like) to foster less than optimum personal values. (And when the authors pay their children a

cash fee for helping by tutoring other children—see *New York Times*, 11/19/74, of which the authors sent us a clipping—we would incline to harsher judgment.) Still, there is much that is useful to be found in this thoughtful and kindly treatment of the practical needs of young children. —MBR

A Survival Manual: Case Studies for the Learning Disabled Teenager, by Helen Ginandes Weiss and Martin Weiss. Yorktown Heights, N.Y.: Walter Goodman, Center for Educational Services, BOCES. 1974.

A collection of suggestions about what to do if the doctor *didn't* come when the teenagers described were in grade school. There is much good insight into why they are as they are and how one should feel about them and help them out of the jungle and into more active learning and better feelings about themselves.

Some components of the analysis and suggested treatment seem well-oriented and well-organized. Others appear less so, as in the mixture of positively and negatively stated questions in the "Teacher's Checklist," which must produce a confusing profile. This reviewer feels more nearly competent to comment on the author's three pages devoted to the Orton-Gillingham Approach than on others less familiar to her. This treatment, referred to as the "Gillingham-Orton Approach" to "corrective reading" (for which it is *not* designed) seems so fragmentary as to be misleading. The suggested use "for drills" of "*Gillingham Phonics Proficiency*" (presumably meaning the Phonics Proficiency Scales which are designed as a criterion for assessment *only* and should *not* be used as a teaching instrument) indicates less than the rigorous study and assimilation of the material and procedures necessary if the approach is to be used effectively rather than superficially. Teenagers, especially, need to have their teaching geared to a consistent, carefully organized core, however freshly and spontaneously its details are presented and however flexibly it is matched to individual learning needs.

Such a "survival manual" may, to be sure, serve this purpose for secondary school teachers just beginning to "find their way out of the woods" in which they and their learning disabled teenagers have been lost. Perhaps it will help them back to one or another well-organized "base camp" where they can learn even more effective coping strategies, to minimize random

and often unsuccessful path-finding efforts on their future "outward bound" academic excursion.—MBR

The Living Textbook, by William T. Lunsford, Jr. Harrisburg, Pennsylvania 17105: The Patriot-News Co. 1972. Revised and enlarged 1974. Available in hardcover or paperback.

Well-presented, educationally informed ways of using the newspaper—the real, adult newspaper, rather than a simplified student version—to vivify all of the curriculum. The clearly written guidebook of 80 pages is for teachers and is especially planned for junior and senior high school classes, but suggested for upper elementary and college levels as well. It should enhance interest in the real world and its verbal representation in the world of newsprint. (NOTE: An additional guide, extending newspaper use to the upper elementary grades, has, we hear, just been issued.)

Why Johnny Can't Add, by Morris Kline. New York: Random House, Inc. 1973.

With skill, logic, and wit, this mathematics professor challenges his fellow teachers on the failure of the new math. He feels that the traditional curriculum was fashioned by relatively uninformed mathematicians with no pedagogical insight, and modern math by narrow researchers with as little teaching acumen. He stresses that training good teachers is far more important than the curriculum, for the new math has had too-high levels of abstraction, and lacked an appreciation of young people's problems and attitudes. To save us from further disaster, the author wants some new math scholars who know their stuff and whom they are stuffing. His well-documented biases lead the reader to ponder his points.

* * *

How to Speak, Spell and Read: A New Way to Learn English, by Elsie D. Smelt. Published by Melbourne Y.M.C.A., 1 City Road, South Melbourne, Australia 3205. 1972. Price, $3.00, plus $.50, sea mail postage.

Every now and then there comes along a presentation of a complex subject which is truly and basically simplified, not just simplistic. Mrs. Smelt has given us such an approach here. To readers of this review it will hardly seem a *new way*, but she has homed in on the essentials of the direct, multisensory teaching of the alphabetic-phonetic system of English for reading and writing (spelling). She has put it all in such simple language and organized it in such a logical sequence, with such clear and direct advice as to how to go about learning (and teaching) that it is hard to see how her students can fail to get off to a good start and an effective follow-through.

One novel turn of her organization is to emphasize the dual regularity of, first, the early English words, and then the words derived from Latin and Greek roots, and to show clearly how the rationale of these two sets of words differ, and how, taking this into account in learning, each can be mastered by a different strategy. Between these two sections in treatment comes a consideration of what the author calls "invasion words" (with a few anomalies from the early English words included here). These are the contributions from the Norman invasion and other introductions, the group in which most of our homophones, homonyms and difficult vowel spellings can be found—and treated rationally and systematically.

To this reviewer, however, the strongest appeal of Mrs. Smelt's approach is its base in reason as the best and shortest way to mastery of the subject, reason implemented by the basic knowledge and systematic practice that make it soundly functional. "Words are made of sounds, and sounds are written with letters. . . . Spelling is writing letters for sounds, and reading is saying sounds for letters, in an orderly manner . . . so that you may know and understand" what you are learning and so become expert in managing the skills of language. There are some matters of technique and order of presentation where readers might implement her insights a bit differently, but she teaches us so much so well that we can hardly afford to be without her.

Structures and Techniques: Remedial Language Training, by Aylett R. Cox. Cambridge, Massachusetts: Educators Publishing Service. 1974.

Mrs. Cox, Associate Director of the Language Training Unit of the Texas Scottish Rite Hospital, has done a monumental job of explaining the

system based on Orton-Gillingham-Childs concepts, given students in the teacher-training program sponsored by the hospital for nine years. Although the reader would profit from taking an introductory course, this book does not make this presumption and gives detailed explanations of all terms and techniques used in the clinical setting where they were developed. It is particularly helpful in its presentation of four daily lesson plans which define the order of concepts within a designated letter order. Formulas for dividing words into syllables and for spelling words are complete and well-organized. The rationale is so presented that the reader can understand the need for additional reinforcement in teaching reading, writing and spelling together, using all of the senses, and the importance of the *process* in this kind of teaching in order to obtain the desired *product*.

Many readers will not want to embrace the total program as it is strictly adhered to in Dallas, but can profit from what has helped severe dyslexics there. For the serious student who wishes to explore the language further, readers are referred to the author's *Situation Reading* and *Situation Spelling*. The particular value of *this* book is to so structure the therapist's procedures that the pupil can become a structured learner. And with the rest of the Alphabetic Phonics materials—Mrs. Cox's *Initial Reading Deck* and *Instant Spelling Deck*, plus the alphabet cards, Workbooks 1 and 2, and Reader 3 (Books 4–6 to follow) developed under Georgie F. Green of the Language Training Unit staff—this book serves as a foundation for structuring the language presentation for the child with specific language disability.

Learning the English Language: Skillbooks I and II, by Eleanor Thurston Hall. Cambridge, Massachusetts: Educators Publishing Service. 1974.

The Gillingham "Green Manual" (1960 edition) contains a chapter on the special use of this approach in the teaching of the older student. Mrs. Hall has geared these skillbooks to the total approach of the Gillingham-Stillman method directly as given in the manual and with especial reference to the point of view of this chapter. A beginning in working with sounds and symbols and their systematic relationships in reading and written expression and with basic grammar is made in Skillbook I. The second book serves as a review of the first and goes further and in more concentrated form at a more rapid pace for the still older or more advanced student. The range of the books is from grades 4 through 8, but they can well be used with older students.

Dyslexia in the Classroom, by Dale R. Jordan. Columbus, Ohio: Merrill Publishing Co. 1972.

The author is concerned not primarily with debate over the use and definition of the term dyslexia, though use and define it he does. His purpose is to give the classroom teacher some understanding of "the symbol confusion found in virtually every classroom in the nation."

He distinguishes visual dyslexia, auditory dyslexia, and dysgraphia and gives many practical suggestions for the identification of each component and the systematic, structured, thorough remediation of each. He recognizes that the teacher can cope with only the marginal, mild and moderate degrees and must, hoping that the needed facilities exist, refer the most severe problems for clinical help. He also helps the teacher sort out the dyslexic (or *language*) disability children from those with other impairments included under the rubric of *learning* disability (aphasia, hyper- and hypokinesis, low vitality, and some forms of faulty vision). The author's "screening tests" and a glossary complete the volume, which has been welcomed as helpful by many teachers open to its viewpoint who are attempting to handle difficulties in specifically language learning in their classrooms.

Slingerland Screening Tests for Identifying Children with Specific Language Disability. Form D for Grades 5 and 6. Beth H. Slingerland. Cambridge, Massachusetts: Educators Publishing Service. 1974.

This form for screening older children for suspected specific language disability is a welcome addition to the previous forms developed for this purpose. A test manual, containing test description, directions for administration, scoring and evaluating, plus cards and charts comprise the total package.

Typing Keys for Remediation of Reading and Spelling, by Maetta Davis. San Rafael, California: Academic Therapy. 1971.

Type It, by Joan Duffy. Cambridge, Massachusetts: Educators Publishing Service. 1974.

The first of these two books is specifically designed for students who

have difficulty with laterality, directionality, mixed dominance, mixed handedness, and inability to cross the body midline. The student looks, hears, speaks, moves and touch-typewrites, making more use of his weaker fingers first and structuring practice until response is automatic. Directions for making key cards and the typing chart make the only expense the book itself. Of course, this developmental approach will also suit those regular students who need a different approach to attain speed and accuracy.

With a slightly different orientation, the second book proceeds linguistically to reinforce spelling and reading patterns. It can be used by beginning students on its own, or as a follow-up of the first stages of learning to type.

* * *

BIBLIOGRAPHY REVISED

A Bibliography on the Nature, Recognition and Treatment of Language Difficulties, Revised Edition, 1974, prepared by Margaret B. Rawson. 8415 Bellona Lane, Towson, Md.: The Orton Society.

The long-promised and very substantial revision of the Orton Society's selected bibliography, or annotated reading list, is finally being published just as we go to press. It includes items reviewed in the *Bulletin of the Orton Society* through 1973 and adds a few with 1974 publication dates. Thanks to computer technology, future supplements should be even more nearly current.

Users will find the nine familiar sections of the list (Medicine, Language, etc.) augmented by a tenth which begins the inclusion of world-wide publications concerning dyslexia. The use of paper in two colors should make the sections physically easier to locate, while the addition of three indexes should facilitate the finding of wanted titles. These are title and author indexes, the latter with secondary authors included by cross-referencing, and a listing of items in chronological order of publication. Publishers' addresses are also supplied. In compliance with users' requests, blank pages continue to be interspersed among the sections to provide opportunity for additions and notes.

As before, following the identifying data for each book or journal paper, a brief annotation indicates the nature of its content and, generally,

its area of probable usefulness and the level of its treatment, for the guidance of users be they layman, novice, serious student, or professional expert.

Contents of the *Bulletin of the Orton Society* are *not* included, since they are cataloged in the *Cumulative Index* of that journal. The two listings are complementary; the student of the subject will need both.

A Statement of Policy

Many people ask what kind of an organization THE ORTON SOCIETY is, where it fits into the pattern of societies and organizations concerned with problems of language and language learning. This summary statement is presented in answer to such inquiries.

The Orton Society, Inc., is a national, non-profit, scientific and educational association committed only to its stated aim: the promotion of the study, treatment and prevention of the problems of specific language difficulty, often called developmental dyslexia, or simply dyslexia. Although the Society, which was founded in 1949, has always been especially interested in understanding the neurological aspects of language disabilities, it considers that it would be violating its purpose and the spirit of the pioneer, Dr. Samuel T. Orton, in whose honor it was named if it should ever become static or adopt a doctrinaire orthodoxy.

As a society its members have joined together because as individuals they have found value and use in an approach to language disabilities which is both broad and specific. This approach is based on the continuously developing knowledge of the nature of language and the needs of its learners. Such an orientation provides a basis for the differential diagnosis of language-learning difficulties of individuals. It also suggests treatment emphasizing the reinforcement of learning through the integrated use of the several sensory channels. Fundamental to such treatment are the systematic presentation and thorough learning of the elements of oral and written language and their synthesis into messages with symbolic meaning. A most important advantage of this approach is its flexibility in meeting the needs of those who have had a common diagnosis of specific dyslexia but present wide individual pattern variations in language development.

The Orton Society does not espouse or prescribe any "official" system or systems of remedial education. Therapists have implemented in different ways the insights of Orton, Bender, de Hirsch, Hermann, Critchley, Thompson, and other diagnosticians and theorists of dyslexia. While the teaching techniques of Gillingham and Stillman and their successors are well known, many others are also employed. A common conceptual approach to the nature of dyslexia and its varied expressions results in similarities in treatment measures; understanding of the comprehensiveness and orderliness needed in each child's language education leads to systematic thoroughness, rather than to a prescribed system.

As a community by reason of interest, with membership open to those who share that interest, The Orton Society does not have judgmental or regulatory functions. Its members are as different as are the individuals whose needs are their common concern. Some members are interested primarily as parents, some as neurologists, pediatricians or psychiatrists, some as psychologists, social workers or educators, some as speech or reading therapists, and so on; others have a more general interest. In any case, members as individuals speak as their convictions lead them to speak, but only by particular appointment do

they act in other groups as representatives of the Society. Membership in The Orton Society does not constitute a professional accreditation nor certify personal qualifications for work in this field. Its importance lies in the sharing of interests and endeavor related to the problems of dyslexia.

In an organized association the efforts of The Orton Society's individual members are strengthened and multiplied in the service of disseminating information about this widespread but little known condition. Recent marked increase in the Society's membership attests growing public awareness of the problem and the need for help in its solution.

In sum, THE ORTON SOCIETY, INC., has a broadly scientific and educational interest in a particular field. Its commitment is non-specific except to its defined function: the promotion of the study, treatment and prevention of the problems of specific language disability, dyslexia. This interest continues to grow and change, as do the scientific disciplines in which it has its bases.

"What's In A Name?"

The name of an association should indicate its philosophy and function, and so nowadays most organizations bear descriptive titles rather than being known by personal names. In the case of the Orton Society, however, such a change has presented more than usual difficulty—a difficulty so far not surmounted.

Just as all current conferences on reading struggle over problems of definition, so has the Orton Society, but it has resolved its problem by retaining the name of the pioneer whose work and attitudes gave rise to its founding. It is, however, in no sense a cult or committed to his or any other beliefs or theories.

To indicate in its name both the breadth and the specificity of the field of interest with which it is concerned, it had three possible choices:

1. When it attempted descriptiveness, it found no single term, nor even brief phrase with acronymic possibility, which was adequate. How could one combine the ideas of the multidisciplinary character of its membership; the interdisciplinary nature of their approach to the subject of common interest; the range of abstraction, from theoretical hypothesis, through laboratory and clinical investigation and diagnostic study, to the varied specifics of treatment; the involvement with human language function, its development and disorders and their remediation; the inclusion of first-language learning, spoken, graphic or formulative reading, writing and spelling, and in any tongue (not only English); and above all the concern with the flexible, yet careful approach to individual problems and the therapeutic relationship with children, students, clients or patients?

2. The society might have insisted on the careful definition and use of some single term. Orton has attempted this unsuccessfully with his part-for-whole coinage, "strephosymbolia." Over the years, from R. Berlin (1887) to, for example, the World Federation of Neurology definitions of 1968 (Bulletin XVIII, p. 22), 81 years later, there have been efforts to use the term "dyslexia." This makes useful shorthand where there is semantic agreement, and the term has been so used in our present statement. Elsewhere, and variously defined, it seems often to sow confusion; witness the many man-hours recently spent on definition by national and international bodies, with no assurance of eventual agreement. Dyslexia, as well as the original "specific language disability," can be no more than explanatory terms in a subtitle, and even there may suggest undesirable limitation of interest and function.

3. The society chose the third alternative. It retained the Orton name as indicative of the range and depth of its involvement, as epitomized by the scientific, humane and practical character of the work of a pioneer. The name would be appropriate even if many of Dr. Orton's prescient hypotheses were not finding increasing understanding and verification at the current growing edges of research. Far from signifying dogma or cult, such a name serves to remind us of the forward look, the enquiring mind, the compassionate spirit and the creative use of scientific discipline in educative treatment.

The Orton Society's policy statement prepared by the officers, directors, and advisors for approval of the membership, will be found to be consistent with the carefully considered reaffirmation of its title.

Facts about The Orton Society

A non-profit educational and scientific organization devoted to the study, prevention and treatment of Specific Language Disability [Dyslexia].

1. It is the only national organization devoted exclusively to helping children with Specific Language Disability (Dyslexia).
2. It was founded in 1949 and named in honor of Dr. Samuel T. Orton, well-known pioneer in this field.
3. It has members in each state of the U.S.A. and in foreign countries.
4. It holds a national conference each fall, and interim Branch meetings.
5. It publishes the annual *Bulletin of The Orton Society*, a professional journal about Specific Language Disability, which is sent free to members, and is available for purchase or subscription.
6. It sends one or more Newsletters annually to members.
7. It issues monographs, an annotated bibliography, and reprints of papers concerning dyslexia and related matters.
8. It offers to members discounts on the society's publications and special rates of admission to many conference events.
9. It has a loan fund to assist teachers in training for work in this field—The Anna Gillingham Fund.
10. It welcomes into its membership educators, doctors, psychologists, parents—everyone interested in helping children with language problems.

MEMBERSHIP IN THE ORTON SOCIETY

A nonprofit organization, with nationwide and international membership, the Orton Society offers leadership in language problems, research, and publications, all related to dyslexia.

Individual and Student membership categories are available. The membership fee includes membership in local or regional areas where branches have been organized. Addresses of Branch Presidents are listed on the opposite page.

All membership fees are processed through the national office, with reimbursement of local branch dues (Individual—$3.75; Student—$1.25). Where there is no existing local branch, the full membership fee is retained to cover services from the national office.

APPLICATION

I wish to join THE ORTON SOCIETY, INC., and am enclosing my check for one year's membership from the date of application.

Date .....

Mr., Mrs., Ms., Miss, Dr. .....

Address .....

..... Zip .....

INDIVIDUAL MEMBERSHIP.....$15.00
STUDENT MEMBERSHIP.....$5.00
(*Full-time student only*)

Of the following categories, please check the one that best describes your position:

☐ Education ☐ Medicine
☐ Parenthood ☐ Psychology ☐ Other_____

SPECIAL CONTRIBUTION
( ) The Anna Gillingham Fund ( ) Endowment Fund
( ) General Operating Fund

(The Orton Society is a nonprofit organization; therefore all dues and contributions are tax deductible.)

Please make check payable to The Orton Society, Inc., and mail to:
THE ORTON SOCIETY, 8415 Bellona Lane, Towson, Maryland 21204.

Orton Society Publications

The publications list, "Orton Society Publications," can be obtained free upon request from the Orton Society, 8415 Bellona Lane, Towson, Maryland 21204.

Branch Presidents

NATIONAL HEADQUARTERS (301) 296-0232	Roger E. Saunders 8415 Bellona Lane Towson, Md. 21204
BRITISH COLUMBIA:	Mr. Richard Lemm Child Psychiatry OPD 717-W. 10th Vancouver, B.C.
NORTHERN CALIFORNIA:	Mr. Nicholas J. Colasanti 3510 La Mata Way Palo Alto, Calif. 94306
DALLAS:	Ms. Bobbie Hamilton P.O. Box 19121 Dallas, Texas 75219
INDIANA:	Mrs. Wanda Stoops 4256 Knollton Road Indianapolis, Indiana 46208
MARYLAND:	Mrs. John H. Heller 8415 Bellona Lane Towson, Maryland 21204
D.C.-CAPITAL AREA:	Mrs. Margo Rood 3520 35th St., N.W. Washington, D.C. 20016
WASHINGTON COUNTY MARYLAND:	Mr. Daniel W. Moylan 300 Meadowbrook Drive Hagerstown, Maryland 21740
MICHIGAN:	Mrs. Barbara W. Marks Rt. No. 1, Box 282 Scotts, Michigan 49088
NEW ENGLAND:	Mrs. Eleanor T. Hall 289 Boston Post Road Sudbury, Mass. 01776
NORTHERN NEW JERSEY:	Mrs. Kathleen Dwyer The Wilson School 271 Boulevard Mountain Lakes, N.J. 07046
CENTRAL NEW JERSEY:	Mrs. Jacqueline Hutton 705 Front Street Union Beach, N.J. 07735
NEW YORK:	Mr. George Meyer 300 East Sixth Street New York, N.Y. 10003
PUGET SOUND:	Mrs. Evelyn Buckley 14002 Stone Ave. N. Seattle, Wash. 98133
TRI-COUNTY (CALIF.) (Santa Barbara, Ventura & San Luis Obispo Counties)	Mrs. Marian L. Kirkbride P.O. Box 30484 Santa Barbara, Calif. 93105
UPPER MIDWEST:	Mrs. Jean Osman 3925 19th St., N.W. Rochester, Minn. 55901

Instructions to Contributors

The editor of the annual *Bulletin of the Orton Society* welcomes the opportunity to consider for publication in the *Bulletin* any article dealing with dyslexia. Manuscripts submitted should be typed double-space throughout, with no single-spaced material whatsoever. The original (preferably on non-erasable bond paper) and one copy should be sent to The Editor, Bulletin of the Orton Society, 8415 Bellona Lane, Towson, Md. 21204. The author should always retain at least one copy of every manuscript. The author's name, academic degrees, professional affiliation (if any), and return address should be typed on the title page or in a covering letter. Always include a self-addressed envelope with proper postage with a paper clip (not glued on) with the manuscript.

The *Bulletin* is published in September each year. Deadline for submitting manuscripts is February 1 preceding publication. Notice of acceptance or rejection will be sent as soon as possible—usually within one month after the manuscript arrives in our office.

Please familiarize yourself with the types of paper that appear in the *Bulletin* and follow the general format of the type of paper you wish to submit. Papers are commonly edited in our office to improve the effectiveness of communication. When editing is extensive and might have altered the author's meaning, papers are returned to the author for approval before type is set. The earlier the manuscript is submitted the more opportunity there will be for such editorial interchange.

Errors can be avoided if bibliographies are submitted in the form used by the Bulletin, that is: author's last name, initials or first name, followed by date of publication, followed by the title of the book or article; finally the volume of a periodical; pages of the article, or (in the case of a book) the city of publication and name of the publisher. For additional details, please examine bibliographies published in the *Bulletin* before typing your bibliography.

Begin the title of your paper with a word useful in indexing and information retrieval. Keep the title short—if possible, not more than six words.

Line drawings to accompany your article should be submitted ready for publication, drawn neatly on white paper with black India ink. Photographs should be high-contrast, glossy, black and white prints. Submit legends for illustrations on a separate page, not attached to the illustrations. Legends should be typed double-space and each one should be clearly keyed to the proper illustration.

Each table should be typed on a separate sheet and numbered. Continue to double-space. Each column must have a heading. Do not use vertical rules on tables. Keep tables simple and as small as possible.

Unless your article is very short (two or three typed pages), please insert short subheads in the text to mark your main ideas. If possible, keep the length of your manuscript under 20 pages.

The editor will be pleased to answer inquiries about articles prior to submission.

World Congress on Dyslexia

SPONSORED BY THE ORTON SOCIETY
IN COOPERATION WITH MAYO CLINIC

November 7–10, 1974 — **Congress Headquarters**

Rochester, Minnesota — **The Kahler Hotel**

PRE-CONGRESS PROFESSIONAL INSTITUTES DAY

Wednesday, November 6

Fifteen all-day Institutes for teachers, administrators, parents, psychologists, speech and hearing practitioners, ophthalmalogists, etc.

THEORETICAL-SCIENTIFIC SESSIONS . . .
STATE OF THE ART PAPERS

Thursday	*Friday*	*Saturday*	*Sunday*
Anatomy Underlying the Language Function			Visual Perception
The Structure of the Language			Cross-Modality Learning
Memory			Emotional Aspects of Language Disability
Auditory Perception			Educational Treatment and Results

CLINICAL-APPLIED-SCIENTIFIC SESSIONS . . . *Friday, Saturday*
TOPIC SESSIONS . . . . . *Friday, Saturday*

Nationally known authorities will speak on specific topics concerning the Teaching of Reading and Spelling, Disorders of Communication, Delinquency and Reading Disorders, Implications from the Study of Genetics, Diagnosis and Treatment, Teaching Strategies for the Adolescent (Individual and Group), and Early Intervention and Prevention.

DYSLEXIA-INTERNATIONAL:
DISCUSSIONS BY DISTINGUISHED GUESTS FROM ABROAD

To be arranged

The public is coordially invited to all events except the Business Meeting for Members. Detailed programs will be mailed to members of the Orton Society. Others may request programs from the World Congress on Dyslexia, P.O. Box 1136, Rochester, Minnesota 55901.